MAR 9 1934

FOOD INDUSTRIES

THE NEWS OF · PRODUCTION · ENGINEERING · DISTRIBUTION

BAKERY PRODUCTS

BEVERAGES

CANNED AND PRESERVED FOODS

CONFECTIONERY AND CHOCOLATE

DAIRY PRODUCTS AND ICE CREAM

FATS AND OILS

FLOUR AND CEREAL PRODUCTS

MEATS AND MEAT PRODUCTS

OTHER FOODS AND SPECIALTIES

CARRY ON

There is still time to register your views with your Senators on the Copeland Bill, now S.2800. Although hearings in the Senate committee have closed, it's votes that count.

After the Senate acts, the bill goes to hearing in the House Committee on Interstate Commerce. There the industry will again present its views.

Urge your Congressman to study the bill before it comes to a vote.

MARCH 1934

McGRAW-HILL PUBLISHING COMPANY, INC.

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CHECK SPOILAGE LOSSES!

HTH makes it easy and economical to safeguard the wholesomeness of dairy and other food products

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You'll find it costs only a trifle... a few cents a day... to employ "chemical sterilization" with HTH. A trial case will quickly prove its value in turning losses into profits. Order today from your regular supply house.

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Soda Ash... Liquid Chlorine... Bicarbonate of Soda... HTH and HTH-15... Caustic Soda... Bleaching Powder... Ammonia, Anhydrous and Aqua... PURITE (Fused Soda Ash)... Solid Carbon Dioxide

THIS MONTH . . .

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FOOD INDUSTRIES

NEWS OF PRODUCTION • ENGINEERING • DISTRIBUTION

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NRA MEMBER U.S. WE DO OUR PART

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Oklahoma City Bakery Modernizes Delivery Equipment with 5 New Half-Ton Internationals

IN keeping with the rest of their modern equipment, R. P. and Paul Swirczynski, owners of the Mid-West Baking Co., Oklahoma City, Okla., have bought a fleet of 5 new International Half-Ton Trucks, with de luxe panel bodies. Realizing the advertising value of these new units, the Swirczynski brothers have had them painted in the attention-getting combination of orange and black, with silver top deck. The side and rear panels are attractively lettered in silver, and their firm name is painted on the top deck as well.

"We are proud to be able to deliver our products in a wholesome manner to our trade, and the compliments from our customers prove we are doing so with our new Internationals," says R. P. Swirczynski, president of the bakery. "These trucks are very economical to operate, they speed up our prompt delivery service, and fulfill our most exacting requirements very successfully."

Why not investigate International Trucks and find out how they can meet your requirements? Any International owner will tell you how they cut delivery costs to the bone by their economical operation. Any International Company-owned branch—there are 201 of them in the United States and Canada—will give you a demonstration whenever you say. Sizes range from ½-ton to 7½-ton. Chassis prices as low as $360 f. o. b. factory. Write us for catalogs.

NRA MEMBER U.S. WE DO OUR PART

INTERNATIONAL HARVESTER COMPANY
of America (Incorporated)
606 So. Michigan Ave. Chicago, Illinois

INTERNATIONAL TRUCKS

FOOD INDUSTRIES

Volume 6 Established 1928—McGraw-Hill Publishing Company, Inc. Number 3

THE NEWS OF PRODUCTION • ENGINEERING • DISTRIBUTION

NEW YORK, MARCH, 1934

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Laurence V. Burton, Editor

The PROBLEM *of the* MEDIUM-SIZE MANUFACTURER

MANY MANUFACTURERS are beginning to feel that A.A.A., N.R.A. and P.R.A. are not helping them at all or are actually harming them seriously. These usually are the manufacturers of intermediate size with only one or two plants, which serve regions or areas usually smaller than a State.

On the other hand, the largest manufacturers, which have national distribution, and many of the smallest, which serve only a neighborhood or a city, seem to be having a little the best of it, except possibly where the latter are still working under P.R.A. wage scales without the benefit of industry policing to curb chiseling tactics by competitors.

The awkward position of the business of intermediate size is due largely to the fact that its volume and area of distribution are not large enough economically to justify aggressive supplementary sales-promotion methods like magazine advertising and radio, which are effectively used by the largest competitors. And, furthermore, the business is too large to exist on the local trade such as will support the smallest units.

IN ONE OR TWO FIELDS of food manufacture the situation seems to be becoming acute, although there are rumblings of discontent in other quarters. And in many forms of non-food manufacturing there have been protests that codes have been written in such a way that the big fellows have a considerable advantage over the others.

Many codes which do not directly affect food processing have an indirect effect which is none the less real when it comes to the figures on a profit and loss statement. Costs of materials, supplies, services and labor have a habit of becoming disproportionately large, sometimes in unexpected places, due in part, perhaps, to the N.R.A. theory that wages must go up before prices.

TWO WAYS to mitigate the problem suggest themselves at once. It is theoretically possible to get relief from any unfairness imposed by N.R.A. codes. Executive approval of a code is limited to a definite period of 90 days, after which the case may be reopened and formal protests registered. Amendments are already known to have been made to some codes.

In cases of demonstrable unfairness imposed by the original code, there is every reason to believe that N.R.A. will make corrections. But it is up to the complainants to prove their case.

However, an equally effective way to meet the situation is to revamp both distribution and manufacturing operations in particular, to the end that the plant be made a low-cost plant. A low unit cost on a reasonable volume is the best possible safeguard against such a situation.

Call on the plant executives and personnel, the consultants, or the equipment makers for help. Many a plant has men in its own organization who have ideas and ingenuity that have never been seriously utilized.

AS IT LOOKS TO US

Good Package Redesign Pays for Itself . . .

When a food manufacturer decides to redesign his package, one question in which all are always interested is, Whose was the original concept of the need of change? Readers will be interested in learning that in the case of Kingan Company the decision arose in the mind of R. S. Sinclair, its president.

Elsewhere in this issue he tells of the various steps through which the company progressed to the culmination in a family of successful packages. It is interesting to learn also that this family of packages received the 1934 All America Twelve Package Award from *Modern Packaging.*

The important lessons to be learned from Mr. Sinclair's discussion are: first, that the production department was consulted at every turn, and indeed it solved one problem that others had not been able to do; and, second, that the redesign has simplified and reduced label costs to such an extent that the savings will ultimately pay the total cost of the change-over.

A further lesson is that designing packages is a job for specialists working cooperatively with supply, sales, management and production men.

Fair to One—Fair to the Other . . .

Startling figures, those, the alleged earnings of four groups of milk distributors during the past five years: Philadelphia, 30.7 per cent on "net plant investment"; Boston, 22.45 per cent; St. Louis, 14.64 per cent; Chicago, 25.84 per cent (see p. 138, this issue). Of course, these are not C.P.A. audits but are A.A.A. figures corrected "to eliminate appraisal, appreciation, idle property and excessive reserves for depreciation and obsolescence." Salaries have been theoretically limited to $20,000.

Granting that the dairy business has not been operated at a loss, the whole truth has not been revealed by these so-called audits. A great many mergers took place in the period 1927-30, which, we suspect, will account for a considerable number of idle high-cost plants. If it is not fair to charge to corporate costs the expense of carrying idle plants, then what shall we say of the parallel case of agriculture and its surplus acreage and cows?

Good Foremen More Important Than Ever . . .

As a direct result of N.R.A. every form of speed-up and wage-incentive plan is "on the spot" today. Food manufacturing codes, which are just beginning to appear in approved form, are giving labor a voice which it never had before. Management should take account of itself to determine what next.

Competent foremen and superintendents can get the work out of their gangs without driving them to desperation. Leadership, persuasiveness and knowledge are still the cardinal virtues in any plant. And there is no present-day substitute for these qualities—not even in a wage-incentive plan of the finest kind.

Opportunity . . .

One of our subscribers is seeking new products. The only provisos involved are that the principal ingredient be meat and that the product be either preserved or only semi-perishable.

Are you interested?

Better Than Allocation . . .

Real salvation for the canning industry can come only if modest restriction in production is accomplished without unduly penalizing the effective units in the business. Perhaps the safest measure of protection against excessive pack lies in the influence on the credit which vegetable packers can secure. From the A.A.A. point of view the important thing is to insure farmer not only a fair contract price for their products but also to *insure that the farmer gets paid by the canner.*

One of the best proposals is that a prompt settlement with farmers be required so that farmers may not be unduly penalized by long delay in payments. Admittedly this would give the farmer something of a preferred lien on the canned goods, as contrasted with can makers and particularly bankers and brokers. But this would hurt only the canner whose business methods were not good enough to give promise of some profit margin. We believe that such a plan is in the interest of developing the industry on a permanent, stable, profit-making basis.

Any other scheme supports submarginal industry to the immediate detriment of the rest of the business and to the long-time disadvantage of the public. And allocation which does not control also the Southern raw-vegetable shipments merely holds a price umbrella over the Southern grower and only aggravates the canner's problem.

Progress

Additional steps toward a revised food and drug law are being taken weekly. The progress is slow, difficult, sometimes uncertain; but it is progress. With each revision the proposed new law comes nearer to a workable, livable bit of legislation under which honest food manufacturers can do business without serious difficulty. May the revisions continue frequently and to good effect.

Rapid progress from now on need not be expected, unless the President should, contrary to present expectation, make this an official administration emergency measure. To do so might well extend the time during which the present session on Congress will continue. That is a prospect cordially disliked. Hence official recognition and push for early passage seems unlikely. But the President has attempted to keep peace between Tugwell and Copeland. This evidences real interest, and a probability that the President will support effective—perhaps even drastic—revision of the present law, should Congress pass such measure.

The food industries should continue to press on Congress their desires for reasonableness in regulation. They should continue to avoid being drawn into the controversies over self-medication, cosmetics, drugs. We have our own business to tend. And we should tend it diligently, leaving the other fellow's troubles to him.

Processing Taxes on Milk

Reading between the lines of the highly interesting speech of Secretary Wallace at Madison, Wis., on January 31, reveals some startling facts and plans affecting the future of the various parts of the dairy industries.

Quite evidently the A.A.A. is attempting to circumvent the laws of economics of perishables by fixing a minimum price to producers while yet imposing a processing tax on butter fat in every form, eventually reaching 5 cents per pound, with a compensatory tax on oleomargarine.

It is still too early at this writing to forecast success or failure of the workability of the plan. Much seems to depend on the existence of base and surplus prices in the various milksheds. Farmers are to reduce production 15 per cent voluntarily below a three-year base, yet are to receive a fixed minimum price. It looks to us as if a lot of milk is going to back up somewhere along the line. Dealers and processers will be licensed in order to enforce the minimum prices.

A hint that production may be partially reduced through slaughter is found in the suggestion that there are still about 600,000 tubercular cows in the country, although the Secretary regards this purely as a public health menace.

A few cows in good production are to be sent South—not for "commercial purposes"—and since they are fresh cows they cannot be used for breeding. It looks like a little free milk for the children of the South.

Depreciating at 42.5 Per Cent . . .

A new problem for the accounting department is created by the latest amendment to the code of the canning- and packing-machinery industry, which may have a profound effect on the rate of depreciation of equipment. Any machine more than two years old cannot have a trade-in value of more than 15 per cent of its original cost or the cost of a new machine, whichever is lower.

During the life of this code it appears that this amendment practically establishes a two-year depreciation rate of 85 per cent, a rate that is not likely to meet the approval of either accountants or management.

If, however, the equipment makers offer new machinery so highly desirable that the food manufacturers won't be happy until they get it, then that 85 per cent becomes an obsolescence charge and probably will be accepted unless upset by the Internal Revenue regulations pertaining to income-tax returns. The very existence of this code amendment ought to be a stimulus to market aggressively some greatly improved equipment.

Changes in Packaging . . .

A curious parallel is found in the development of packaging of pickles and wines. A dozen years ago saw 80 per cent of finished pickles sold in bulk—that is, in barrels or kegs—and only 20 per cent in glass. Today that condition is exactly reversed.

California wines have experienced a similar reversal, though the cause, superficially at least, is different. From 85 per cent of sales in bulk in preprohibition days to 85 per cent in glass bottles today is the extent of the swing.

Although the changed method in the case of wines is ascribed to legislative requirements, one wonders if the legislators themselves have not been sold on the better methods of merchandising and distribution that accrue when goods are sold in consumer packages.

Beer Turns Sour . . .

We borrow the title from a most stimulating discussion on the brewing business, which has been running in *Pinters' Ink* during the past few months. From our own observations, a great deal more dirt regarding the troubles of the brewing business or brewers still remains to be dished up.

A recent outburst, a part of the discussion, contains the following:

"I have been in close contact with something like 40 brewers, and I can tell you that most of them are chaotic in almost every aspect of the management; that their production methods are for the most part obsolete —and you know what the merchandising picture is. . . .

"Here are two predictions to place in your almanac for 1935. Before they are on a sound and successful operating basis, at least 60 per cent of the present breweries will have to change management. At least 40 per cent will have to revise their capital structure downward.

"A good production manager or consulting engineer who never was in a brewery before can spend a week or two in the average plant and come out with an impressive list of wasteful, outmoded practices, even though he will not go into the technical intricacies of brewing."

All of which leads us to say, "we told you so."

"The Honeymoon Begins" was the title of our warning issued in April, 1933, FOOD INDUSTRIES on page 122. In which we said in part: "After the honeymoon period of a few months, the real struggle for the market will begin. There will be technical headaches aplenty. The race will not be necessarily won by the volume producers. Nor can it be won by quality alone without due regard to cost. . . . The insulated tank car, the decentralized bottling unit and the mechanical refrigerator cabinet are economic factors that loom huge on the horizon.

"Our best advice to readers in the cereal beverage group is that they keep their wits about them during the honeymoon; that they continue the study of technical and mechanical advances made in the large branches of the food field where problems affecting taste, color and keeping qualities have been met and solved.

"And to those who fear the worst from competition from beer we urge that they also keep a clear head. Many a concern has been nearly wrecked by incorrect appraisal of the delirious events of a commercial honeymoon."

Weather and the Solar Constant of Radiation . . .

If your plans or your business is affected by some of the recent cold waves, we suggest that there may be some causal relationship between a good old-fashioned winter and the subnormal value for the solar constant of radiation, a value which has been forecast for some time. The curve of this forecast has been printed each month on the Business Trends page to aid our readers in making such deductions and observations as they may.

In case you are interested, the long-range forecast is that the winter of 1934-35 will be much like the winter of 1933-34 through which we have just gone, but the winter of 1935-36 will be much like that of 1931-32. Unfortunately the day-to-day-observations since May, 1933, are considered very unsatisfactory, due to a number of circumstances. We are informed, however, that reliable figures will be available in the near future.

Redesigning PACKAGES *and* LABELS

How the Kingan line has been redesigned for simplicity, uniformity, beauty and lowered cost

By R. S. SINCLAIR
President, Kingan & Co.
Indianapolis, Ind.

KINGAN & CO. has been restyling and redesigning its entire line of labels and packages. The fundamental design adopted is applicable to billboards, office stationery, motor trucks and refrigerator cars as well as to all forms of labels and packages.

In any concern as old as Kingan & Co., which was founded in 1845 in Belfast, Ireland, a great variety of labels and brands, frequently unrelated, is certain to accumulate with the passage of the years. And these labels and brands are often tied to traditions and memories that to the older members of the organization recall the successes that have come during the continued existence of the company. There is also the great value and good will accumulated in the course of these years in the minds of the company's customers, the value of which cannot be easily calculated.

Progress Demands New Designs

About two years ago Kingan & Co. decided that the designs of its principal labels had wandered too far afield and should be revised and standardized in such a way that the entire Kingan line should have a family resemblance so that all the different packages and labels would be recognized as being members of the Kingan line, even without the reading of the name. It was our hope that this design could be applied not only to our first brand of "Reliable" but also to our other brands, particularly our second brand, "Indiana." The extent to which the trademarks for these brands should be revised was also a problem of considerable discussion as to how far the values of the old designs could be preserved and how far they should be discarded.

The first approach to the solving of these problems was made by members of our own organization, working on it as opportunity permitted. It was soon evident, however, that we were not accomplishing our purpose by this approach. Our next effort was to ask suggestions from those who were printing labels or manufacturing packages of various kinds for us. Some very interesting results were obtained in this way, but we found that the carton manufacturer approached the subject with the carton in his mind; the label manufacturer with labels only; the tin-can manufacturer with the appearance of the can and the printer of Cellophane with the application of the proposed label chiefly to Cellophaned products. We found that we were not getting a satisfactory solution to our problem in this way.

This experience led us to the conclusion that our problem could not be solved without putting it in the hands of a single individual who understood all the requirements of the various uses to which designs might be applied; who had expert experience in designing and whose knowledge of the needs of various characters of packages as well as the limitations of the use of lithographing and printing on various materials would be helpful. The selection of Arthur S. Allen for this work was made, after careful investigation of many capable designers and after visiting studios of these designers in various parts of the country. H. H. Ferguson, head of our merchandising and promotion department, was assigned the responsibility of following

THE OLD STYLE PACKAGE

Green, black and red were the dominant colors in this old five-color package design, now replaced by the new style.

. . . AND THE NEW STYLE →

The colored illustration shows a part of the new line of Kingan's packages.

KINGAN'S
RELIABLE
SUGAR CURED BACON
SUGAR CURED SKINNED HAM
CORNED BEEF HASH
OX TONGUE
PURE LARD
CREAMERY BUTTER
SLICED BACON
SELECTED EGGS
SPICED LAMB TONGUES
LUNCHEON LOAF
SPICED HAM
CANADIAN BACON
PORK TASTY
KINGAN'S RELIABLE
IN THE NEW DRESS!
These Packages Designed at the Studio of Arthur S. Allen, New York

through the details of this work as far as the company was concerned.

Two major decisions were early made: First, that the values of the old "Reliable" trademark should be preserved, but in a simplified form; second, approval was given to a block design of alternate colors. The first of these was successfully accomplished with the general approval even of those who had lived with the original design over the course of years, and was a successful solution of the question of abandonment or revision of this design, both of which had been suggested. The second decision was made more easily, as there were many features in the block design as presented by Mr. Allen that were useful in carrying certain information that must necessarily appear on the label or package covering a packing-house product.

On the question of colors, progress was even more deliberate. Various combinations of colors were produced, and it was interesting to note the shifts of opinion as these combinations were studied and lived with as they were displayed in our office in the course of about two months. The gravitation of opinion toward the golden buff and the dark blue, which were finally selected as the colors for the "Reliable" brand, was very decided. The selection of the same golden buff with the deep red for the second brand represented the second choice in the colors considered.

In order to reach these decisions, actual packages were made up in these colors and were left on display in the office, and various changes of shade were made until the final selection of the rich colors which will be those that will comprise the Kingan "Reliable" and "Indiana" brands in the future.

Much careful study of the simplicity and effectiveness of the labels and packages was made. Unnecessary wording or decoration was eliminated. As far as possible, uniform arrangements of these wordings were preserved and, of course, the two major colors were used in such a way as to create a contrast of the lettering against the background.

Production Departments Consulted

Having arrived at the point of approval of the general design, the application of this to the individual packages followed naturally. As each label came up for discussion, all of the interested individuals were brought into consultation. The lithographing department and the various divisional superintendents and foremen were consulted for their ideas. Mr. Allen spent much time in the plant studying the operations to determine the necessary adaptations of the designs to the various packages and of materials that would be most useful under the actual working conditions and the requirements of the particular packages. A difficult problem was presented, for example, in the label for canned products, where the design is lithographed on tin, but must withstand the temperatures and conditions of processing. Ordinary lithographing inks would not retain their colors under this treatment, but our own lithographing department spent much time in working out this problem and finally solved it.

Tolerance Cards Control Color

The tolerances as to color shade in these labels are within a very narrow range. To control this, color cards were prepared by Mr. Allen showing the limits of shade that would be allowed and all printers and lithographers and manufacturers of paper must keep within those color shades in order to produce a satisfactory label or package. Duplicates of these color-tolerance cards are filed with those from whom the labels or packages are to be purchased and they must remain within those tolerances. All colors must be made to withstand the effect of light and are tested so as to make certain that there will be no fading in the colors on the packages no matter how long they may remain on the shelves of the dealer. Many tests were required before a satisfactory paper was produced—one that would meet these specifications.

Redesign Will Pay for Itself

The simplicity of the design produced by Mr. Allen has contributed one feature that was not entirely a part of the early ideas with which we started. By the use of a golden buff paper for the background of the label or wrapper, the design is printed or lithographed in only two colors. This has materially reduced the cost of the printing of our labels and packages and made it much easier for the manufacturer to produce a clear-cut label. The economy involved will very rapidly repay to us the considerable cost that has been involved in this new designing work.

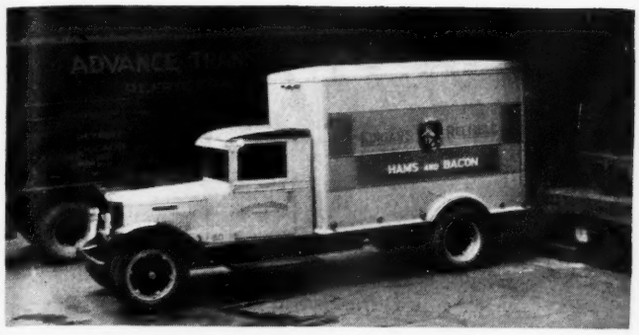
The block design is to be extended to all features of our business where it is suitable. We are applying it to our motor trucks, salesmen's cars, refrigerator cars and to advertising signs, in all of which cases we feel that the effect is harmonious and striking.

For sources of our new packaging supplies we naturally turned to those who have long been serving us satisfactorily and to those who have assisted us in working out some of the problems of the designs and the materials to be used, nearly all of whom have been able to supply our needs in accordance with the specifications.

All refrigerator cars, signboards and other suitable places will carry the Kingan color scheme.

Not sufficient time has elapsed since Kingan & Co. began the redesigning of labels and packages to display them all; enough of the packages have been changed over to give us the collection shown here.

We believe that in these designs we have accomplished our objects of creating a family association or likeness with a large degree of artistic value and of advertising effect. This has been produced with a happy com-



The fundamental color scheme of the entire package line has been carried to trucks and salesmen's cars.

bination and contrast of colors, a clearness of printing design and a simplification of wording and decoration that expresses most forcibly those points that should be brought out in any label. Added to this is the practical universality of the application of this block design to all the uses required by the family of Kingan labels.

We consider, therefore, that Mr. Allen has accomplished admirably the solution of the problem which we presented to him when the work was started.

It's B·T·U·VALUE *—Not Tons—* That Generates Steam

By N. T. PEF
Chicago, Ill.

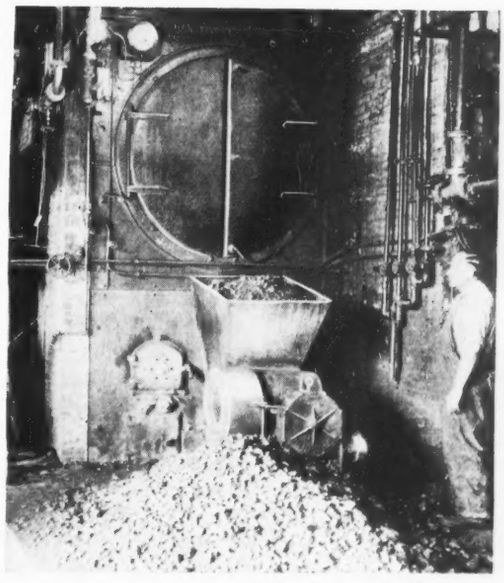
IT IS the capacity to generate heat that makes coal valuable. And B.t.u. content represents capacity to generate heat, with certain reservations for the burning quality of the fuel and its adaptability to existing equipment. Therefore, coal should be bought by heat units—not by price or the ton.

The heat rating of coal varies from 7,500 to 15,000 B.t.u. per pound. While the price varies in a general way with heat content, the relation is more often than not out of line. Broadly speaking, of the two heat ratings cited above, the price of coal with the high rating should be $6 a ton if that with the low rating is $3 a ton. For with this relation between heat content and price, each coal yields 5,000,000 B.t.u. per dollar.

The author recently made a survey of the coal market in Chicago. This study brought out that the coal users were paying 16.25 to 19.50 cents per million B.t.u. (price based on car lots delivered to track siding). This means that some coal users are paying about 20 per cent more for their fuel than others. While in rare instances operating conditions and equipment may have necessitated the selection of other coal than the most economical, in the majority of cases, ignorance was at the bottom of the poor choice.

Coal has other characteristics, and these should be taken into account, but the heating value is by far the most important. The plant that purchases its coal on the heat-unit basis, even when other qualities are ignored, is about as far advanced from the plant that buys its coal by the ton as is the modern steam engine from that invented by Watt. For all practical purposes, there are three other characteristics that need to be considered: (1) the burning quality; (2) the reaction on the refractory lining of the furnace; and (3) the tendency to smoke. The last two of these are of comparatively little importance.

As the name suggests, the burning quality is the ability of the coal to convert its potential heat into usable energy in the form of steam. This can be determined only by an evaporation performance.



The heat value of coal varies from 7,500 to 15,000 B.t.u. per pound. Price is often out of line with value.

The first step in choosing a fuel is to select those that offer the most heat units per dollar. The next step would be to subject these to an evaporation test and single out the one that generates the most steam energy units per dollar.

Suppose there are four coals for consideration and their prices in terms of cents per million B.t.u. are as follows: (a) 19.0, (b) 18.5, (c) 18.0, and (d) 17.8. Coals (c) and (d) are selected and are tried, with the result that the efficiency with (c) is 75 per cent and with (d) 70 per cent. Then the cost of steam generation, in cents per million B.t.u., will be 24.0 and 25.4, respectively, so that the final choice will fall on fuel (c).

The Wine-Production

PACKAGING has come to the wine industry, not through the stimulus of better merchandising methods but because of legislative control imposed by various authorities . . . . Prior to Prohibition, 85 per cent of California wine was sold in bulk. Today 85 per cent of it is sold in bottles . . . . Although bottling at the winery costs the consumer about 12 cents per bottle, it will be an important contribution to the reputation and quality of carefully controlled brands.

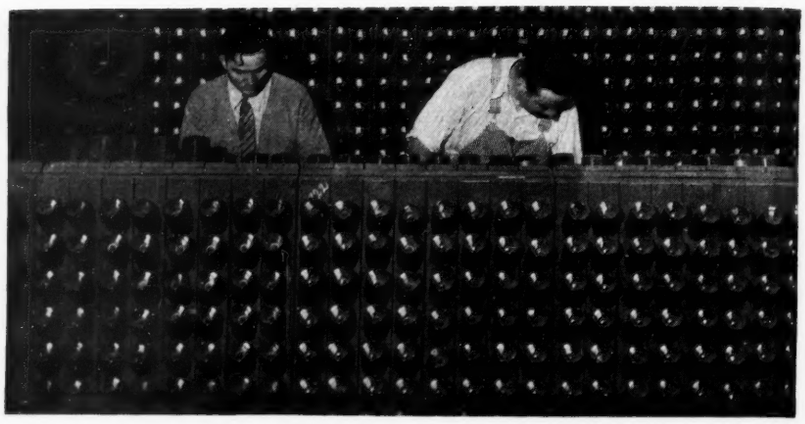
By HARRY A. CADDOW
Secretary, Wine Producers Association of California
San Francisco, Calif.

A FOOD-PROCESSING industry leaped from practical stagnation to an expenditure of more than $13,000,000 within twelve months on plant extension and rehabilitation in California alone! That surprising change is typical of what repeal of the Volstead Act means to the wine industry.

Had there been foreknowledge that 1933 would bring repeal, a program for the wine industry could have been worked out in advance. But the industry was not destined to receive advance notice.

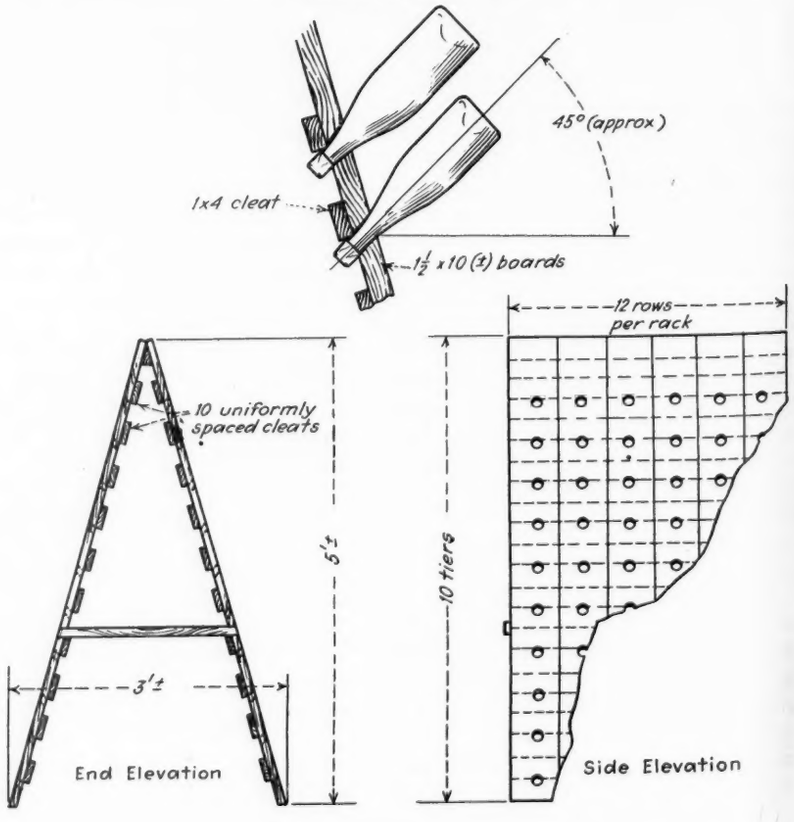
Last July, 152 bonded wineries were operating in the State of California. As the year wore on and public opinion throughout the nation began to swing more and more definitely toward immediate repeal, the number of wineries in California rapidly increased and by the end of 1933 had reached a total of 409. This meant a heavy expenditure for new buildings, new machinery and equipment, new cooperage and the general rehabilitation of all existing plants. Total expenditure of this sort for the State in the latter half of 1933 was $6,000,000. The end of the year found this work about half done, and present estimates are that $7,500,000 will be expended on similar work throughout the State prior to the grape harvest next summer.

Early estimates as to the probable wine production in California during 1933 ranged from 20,000,000 to 30,000,000 gal. A close check after the season closed showed that the vintage would be closer to 40,000,000 gal., of which approximately 22,000,000 gal. is dry wine and 18,000,000 gal. sweet wine. To reach the total supply now



Champagne, during aging, is constantly under the supervision of cellar men who observe its progress and eliminate the unpromising. At regular intervals the position of each bottle is shifted one-fourth turn. The white spots on the bottle bottoms are chalk marks which serve as indicators in turning the bottles.

The sketches below give details of rack construction and relative position of bottles in the racks.



Situation in California

available in the State, to these figures should be added the stocks that were on hand in California prior to the 1933 grape harvest, a total of 23,000,000 gal. ranging in age from one to fifteen years. Hence, at the outset of repeal there was on hand in California a total of approximately 63,000,000 gal. of wine of various sorts and ages.

Question has been raised as to whether there would be a shortage of domestic wines in the United States early in 1934. It is my opinion, however, that at least for months to come there is sufficient wine available to take care of the market's demands.

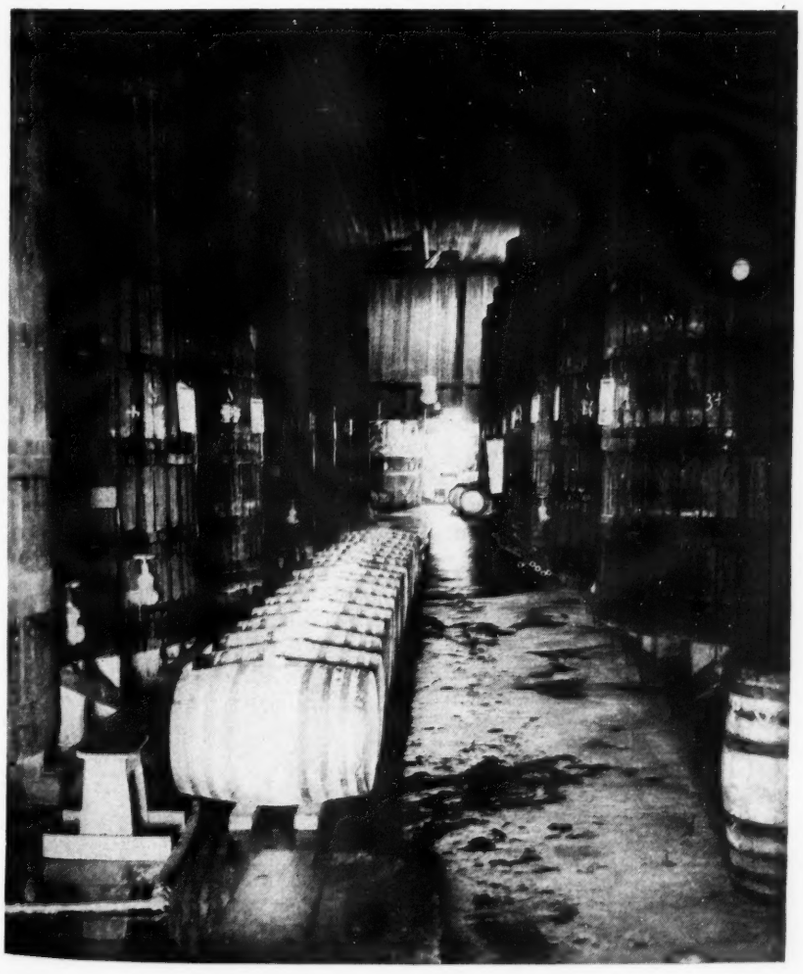
During the years of prohibition, it was commonly believed that the wine industry of California was at a standstill. This was not the case. The 152 wineries in operation, while limited to very low production, did continue to keep their inventories balanced from year to year. The products were sold for medicinal and sacramental purposes. The total production during these years was about 5,000,000 gal., in comparison with the 50,000,000 gal. which was being produced in California prior to the Volstead enactment.

Another question now heard frequently is, How long will it take the California vintners to get back to pre-prohibition level in production? The answer to this is dependent upon the extent to which California wines are accepted and the apparent demand prior to the 1934 vintage. If the indications of demand justify it, production in 1934 can be stepped up to 100,000,000 gal. Moreover, if the demand continues, within three years California can produce annually in excess of 200,000,000 gal. without the necessity of setting out a single acre of new vineyards. Prior to prohibition, 85 per cent of the California wine production moved into channels of trade in bulk—that is to say, either in tank cars or in barrels. The remaining 15 per cent was bottled and cased for class trade. This picture has been changed entirely by legislative action taken by individual States and by the attempt ultimately to control the traffic not only in wine but in all intoxicating beverages.

The present insistence is that all beverages be sold to the ultimate consumer in original packages. This means that now 85 per cent of the wines moving into interstate commerce are in case lots and only 15 per cent are moved in bulk. Whether or not this situation will continue is unknown, but it must be remembered that this condition has increased the cost to the ultimate consumer about 12 cents per bottle. It remains to be seen whether or not this fact will aid the bootlegger and tend to perpetuate home manufacture. If a wide distribution of wine is to be had it must be available to the masses at a price in keeping with present economic conditions.

Significant changes have come about in the packaging of wine—practices have been completely revolutionized since preprohibition days. Formerly it was almost sacrilege to put wine in any type of bottle other than that type which the custom of centuries dictated. The standard stopper was none other than cork. A square-type bottle or a flask would have been ruinous to the manufacturer or distributor of wine. Today, with so many people living in apartments in cities, where space is at a premium, bottles of short, squatty dimensions are more popular because they fit nicely in the modern electric refrigerators. The screw-top stopper is very acceptable, particularly to the women. Also, I believe that California vintners are capable of producing wines comparable, if not superior, to any wine imported from a foreign country.

In the old days carefully prepared wooden barrels were the storing and shipping containers for California wines. Note the several lengths of rubber hose lying beside the wooden vats in the middle background. In wineries and breweries the rubber hose is the traditional means through which the liquids are transferred from one step in the processing to another.



What Is Happening to Our Meat Supply?

By J. E. POOLE
Chicago Livestock Exchange
Chicago, Ill.

Whatever meat is selected by the housewife largely determines the choice of the other foods on the table. All food manufacturers will be interested in learning what is ahead.

REDUCED meat production, one of the advertised objectives of the campaign for agrarian relief, is entering the accomplishment stage. Cattle are being liquidated at light weight and in deficient condition; hogs have been going to the shambles for three months past in the same manner, only a prosperous sheep industry pursuing an even course.

The logical legacy of cheap corn during the first half of 1933 was the heaviest production of both beef and pork since 1924, but as the feed bill mounts, production's pendulum swings in the opposite direction. Profoundly influencing pork production, the federal corn policy is also exercising a restrictive influence on cattle feeding, reversing the government policy of 1932 and early 1933, when, in an effort to reduce a corn surplus, feed lots were filled to the brim with stock cattle acquired with the proceeds of barnyard loans from the federal Treasury at prices prohibitive of profit in the finality of the operation. That lending policy was largely responsible for excessive beef tonnage that demoralized the market during the last half of 1933, a passing condition already at the remedial stage.

When the government corn-loan policy was announced recently, millions of bushels were promptly sealed, automatically arresting replacement of cattle in feed lots and insuring reduction of future beef supply. Between government purchasing of hogs under 200 lb.—ostensibly for relief purposes, but actually to bolster prices previously depreciated by process-tax application—slaughter of pigs last fall and advancing corn cost, the porcine population of the corn belt has been substantially reduced. Converting 45-cent corn into hogs worth $3 per hundredweight on the farm at that time was not to be given serious consideration from a production standpoint; consequently, hogs went to the butcher early and at deficient weight, a tendency that was not checked until February, when extensive government purchasing changed grower psychology.

The attitude of the average hog grower toward the corn-hog program is almost unanimously favorable. It means receipt of a check drawn by Uncle Sam, cashable promptly at the local bank in payment for a nonexistent commodity. All the grower is required to do is abstain from production. The majority may be skeptical of the ultimate outcome of what is admittedly an experiment; an insignificant element deprecates the entire program, but 90 per cent of the corn-hog growing community is anxious to sign up; still more anxious for a letter from Washington containing the initial payment. Drop off at any Mid-Western town any day of the week and you will run into a corn-hog gathering at which the principles of the plan are expounded.

Thirty days hence, those in charge of the campaign will know definite results, but it is a foregone conclusion that in the surplus-corn and hog-growing States, the sign-up will be general, as even the passively recalcitrant element is reluctantly coming across under persuasive pressure, if not apprehension of ostracism. Such is the furor over the corn-hog program that a negative position is socially uncomfortable.

Impending destruction of porcine infancy will put the initial step in that sphere of agricultural economics in the shade. Compared with immolation (at government expense) of approximately 6,000,000 pigs last fall, at least 15,000,000 pigs, or 25 per cent of recent annual production, will, under the terms of the contract now being avidly signed, disappear at the point of birth between March and September.

Growers are given considerable latitude as to time of disposal, none as to the method, which amounts to destruction. Safeguards against bootlegging apparently are equal to frustrating human ingenuity, and the detective capacity of the entire population has been invoked to prevent evasion. Chiseling may be possible; bootlegging on a scale of magnitude is inconceivable. Twenty-five per cent of the 1934 pig crop, assuming that farrowing is normal, cannot go to the butcher and will be knocked on the head either at weaning time or shortly thereafter. The runt pig previously nursed is about to disappear.

Threat, if not certainty, of a processing or compensatory tax on beef has exerted a disturbing influence in beef production circles. As to who pays a processing tax is still in the sphere of controversy, and the average cattle feeder, realizing what happened to hog values when a preliminary tax of $1 per hundredweight was imposed, is averse to refilling feed lots, on the theory that his finished product, beef, may run into similar tribulation. One effect of the processing-tax threat is relatively low prices of unfinished cattle. The

(Turn to page 144)

Dextrose

As An Industrial Commodity

A food product occurring in nature often reaches commercial importance only because technical information in the hands of the food engineer points a way to produce it at a low cost and of a uniform quality

By JOHN KRNO
Research Department
Corn Products Refining Co.
Edgewater, N. J.

DEXTROSE is a basic sugar widely distributed in nature, but whose various commercial forms cannot boast of a great age. The starch syrup, one of the first commercial forms of dextrose derived by the acid hydrolysis of starch, was discovered about one hundred and twenty-two years ago, and is commonly accredited to Kirchoff. Until 1831, this discovery was of no commercial importance, especially as far as the United States is concerned. In that year S. Guthrie and a Captain Potter erected a factory at Sackett Harbor for the commercial production of a sugar syrup.

Prior to Kirchoff's discovery in 1812, dextrose was available to users in the form of honey, of which it is an important part. Other products containing dextrose are the ordinary cane or beet-sugar molasses and also commercial invert sugar. In this discussion and in the accompanying table of uses we have limited ourselves only to those products containing dextrose produced by the acid hydrolysis of starch. We have used the terms "corn syrup" or "corn sugar" in our headings because by far the largest quantity of these syrups and sugars produced in the world have cornstarch as a parent substance.

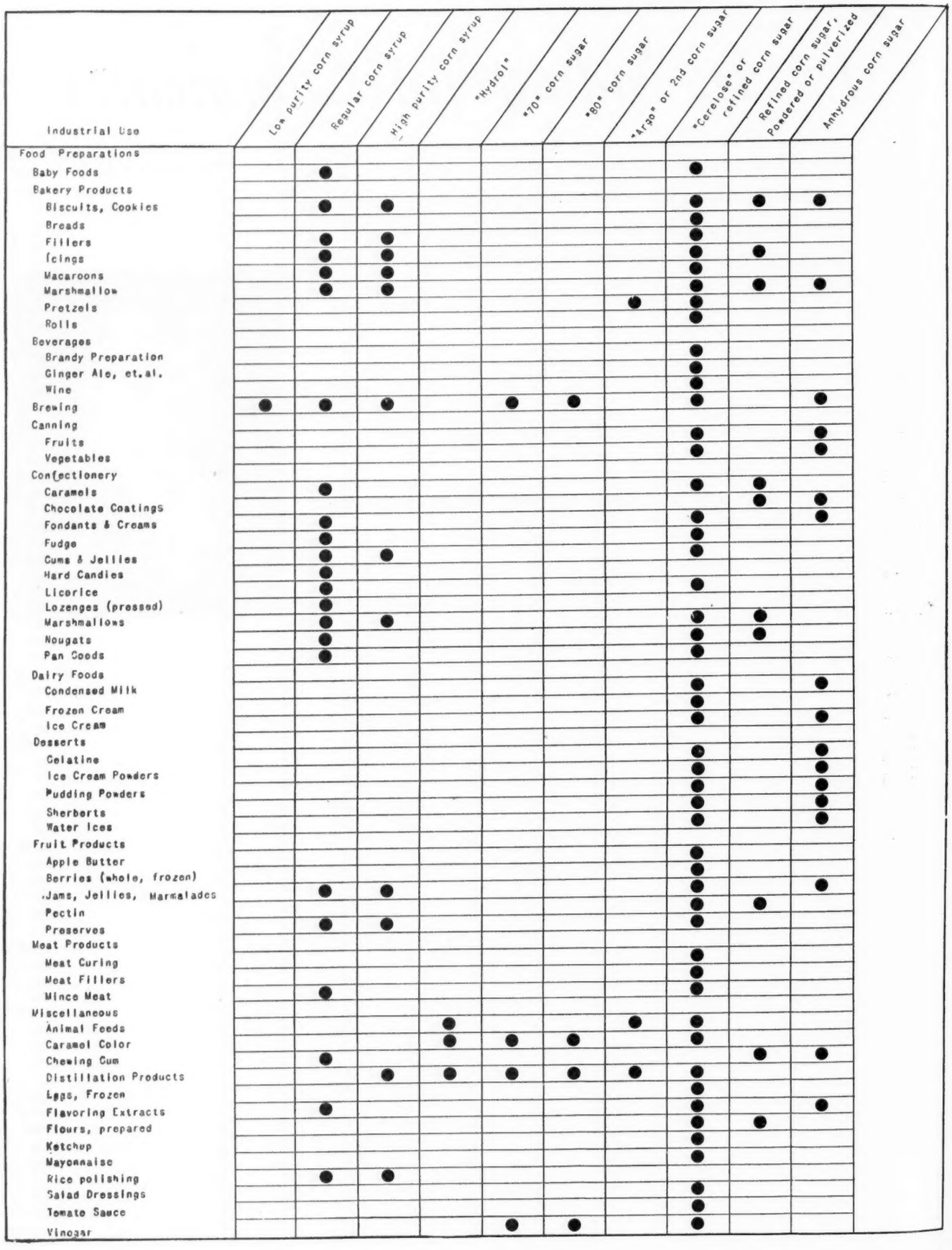
In the accompanying table of uses, ten commercial substances are listed containing dextrose and produced by the acid hydrolysis of starch. An attempt has been made in the table to grade the different forms in which dextrose is offered on the market, starting with the product containing the lowest quantity of dextrose and ending with the one containing the highest quantity of the sugar. In the corn products industry the term "purity" is commonly used in describing the manufactured articles. This indicates only the reducing sugar content calculated as dextrose on the dry basis. It does not refer to cleanliness, which, of course, without question is an important attribute of each of the products listed.

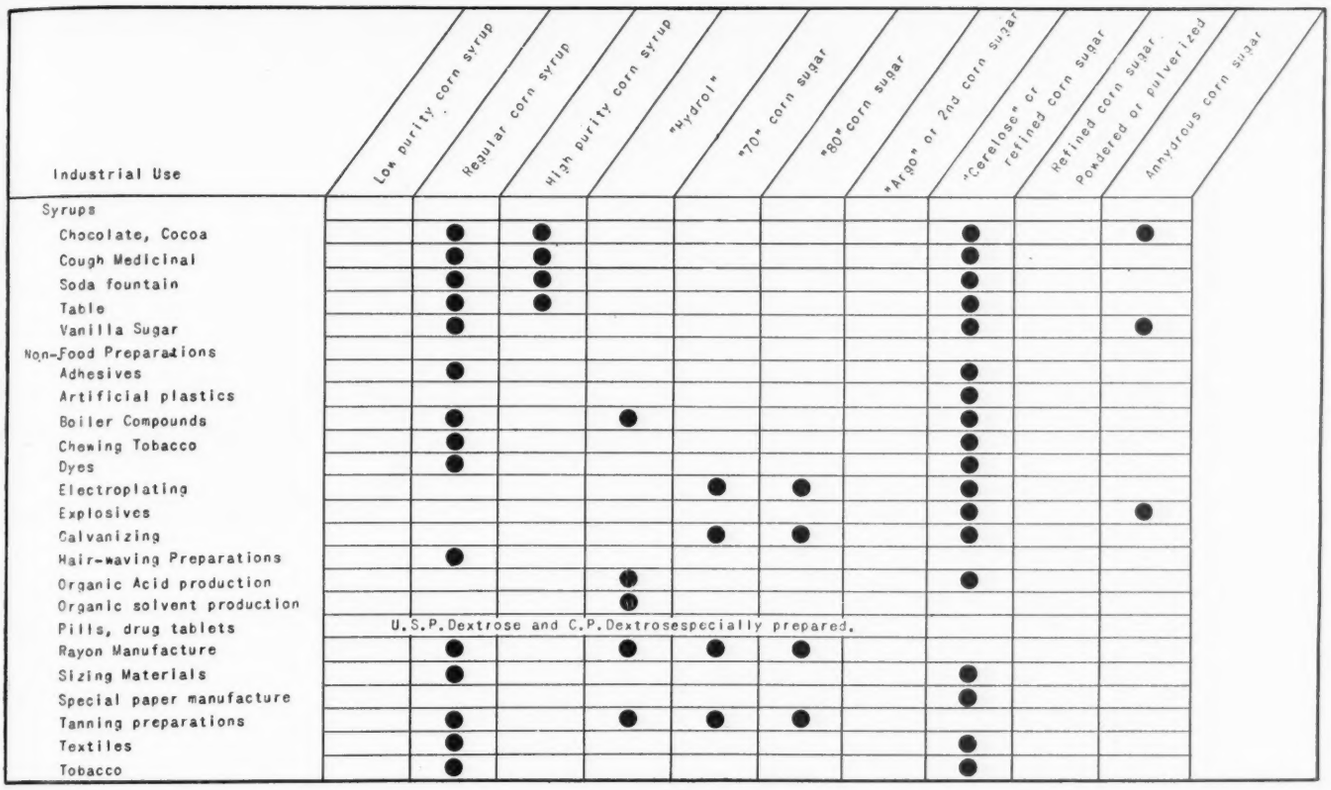
The low-purity corn syrup, hence, does not mean that it is not highly refined. The "low-purity" indicates that its reducing content, figured as dextrose, is much lower than that of the most common corn syrup. This reducing-sugar content, figured as dextrose on dry basis in this type of syrup, varies from 28 to 32 per cent. The syrup has a limited use and is mentioned only to make the story complete. This low-purity corn syrup, because of its high dextrin content, is of high comparative viscosity and is therefore produced only at one Baumé concentration: 42 deg. at 100 deg. F., using a modulus of 144.

The regular corn syrup appears on the market in various Baumé concentrations from 41 to 45 deg., because of the demands and preferences of certain users. For instance, the 42 deg. Bé. is used for mixing purposes in the making of table syrups or in bakers' jams and jellies. The 43 deg. Bé. when specially neutralized and its invert power reduced to a minimum, is the most widely used form of corn syrup. It is used chiefly in the confectionery industry and enters practically all of the candies. In 1930 the candy industry alone used in the neighborhood of 450,000,000 lb. During the same year the total production of corn syrup was above the billion pound mark. That is its main use. The 44 and 45 deg. Bé. corn syrups are especially adapted to chewing-gum manufacture. All these corn syrups, no matter what their Baumé, have a reducing-sugar content on dry basis varying between 40.0 and 43.0 per cent. Of course, a special use may require that the syrup should have another particular specification, for instance, the pH and acidity or standardization of any possible inverting power on cane sugar with which it most often is used. All these syrups are very nearly water white. The Baumé, of course, as previously stated, is always reported at 100 deg. F. and syrups are sold on that basis.

For certain purposes—for instance, for the making of marshmallows or for some mixing use—a syrup of dextrose content higher than normal is required sometimes. We have grouped such syrups under the name of "high-purity" syrups. Provided the use is sufficiently large, a manufacturer can obtain a syrup of any type between a reducing-sugar content on dry basis of 48 and as high as 60 per cent. Syrups of certain high percentages within these limits are, of course,

Uses of Commercial Forms of Dextrose Made by the Hydrolysis of Cornstarch





available at all times. Dextrose content higher than 60 per cent on dry basis may result in crystallization, and possible solidification.

Another vehicle for dextrose in syrup form is called "hydrol" in the trade. Its Baumé will be either 42 or 43 deg. This product will have a reducing-sugar content, figured as dextrose on dry basis, varying between 65 and 72 per cent. It is a product which, in the corn-products-refining industry, has very much the same position as molasses in the cane- or beet-sugar-refinery industry. However, it is much richer in sugars as a rule and the article of commerce has undergone considerable refining and purifying.

We come next to the dextrose products which enter the market in solid form. The first two sugars of this type, known in the industry as "70" or "80" sugar, differ mainly in the moisture content. The "70" or "80" means that as the user receives them he is buying 70 or 80 per cent of reducing sugars figured as dextrose. In other words, the "70" or "80" sugar, as the case may be, is not based on dry substance but is based on the commercial product as received.

These sugars may be highly refined; however, no "hydrol" has been separated from them in any way. They also, depending on the use, may be specially treated or formed in some particular manner differing from the normal way of manufacture. For instance, some of these sugars must not produce a foam when melted down. If they are to be used as a starting point for the manufacture of a food product or a product to be used in foods, the use of sulphur dioxide has to be dispensed with. These sugars are sold to the trade either in slabs or chipped to certain standard sizes, and sometimes in barrels.

The so-called "Argo," or second corn sugar, is the product next highest in reducing sugars and dextrose content. This content on dry basis will reach as high as 96 per cent. It is a sugar from which a very great portion of the "hydrol" has been removed. It is sold in the form of very small pellets or granules which are free flowing. It has a slightly yellow color.

The next sugar in the scale of these products is the one called refined corn sugar. This sugar is crystallized from water solution and on a dry basis its dextrose content is over 99 per cent. Its moisture, chiefly due to water of crystallization in the structure of the sugar crystal, equals from 7 to 9 per cent. This sugar finds its biggest use in the baking industry. It is also gradually entering a large number of the other food industries such as confectionery, ice cream, condensed milk and many more, most of which are listed in the accompanying chart. This sugar is a mixture of fines with some pellets and granules. In order to fit it for certain special uses—for instance, the chewing gum industry or for the cold beat process of making marshmallows—it was found necessary to market it in powdered or pulverized form. A special form also is produced for panning operations in the confectionery industry.

The most highly refined commercial dextrose, of course, is the anhydrous corn sugar, which, as its name implies, contains as received by the user less than 0.2 per cent in moisture and its dextrose content on a dry basis exceeds 99.9 per cent. Because of its being free from moisture, this sugar has opened the chocolate industry to dextrose, in which it finds its widest use and application. The fact that this sugar will absorb on direct contact from 7 to 9 per cent of water results in many interesting industrial uses. This sugar is continually widening the possible application of dextrose in industry.

This article cannot hope to cover in detail the reasons for the use of each dextrose product in a particular field. Nor is there immediate space available for a discussion, even sketchily, of the usual methods of application even for the most important uses. All that can be indicated is the use for the particular dextrose product in various industries, which has been attempted in as complete a manner as possible in the accompanying chart.

Large-Capacity Mechanical *Bake Ovens*

Make Low Unit-Cost Production Possible

By **HARRY CARLTON**
New York, N. Y.

● Profitable manufacture of staple goods for a highly competitive market depends largely upon the capacity to produce them in great quantities on a small margin of profit.

● For this type of production it is desirable to have the plant equipment as nearly automatic in operation and as self-contained in functions as possible.

● High installation and operation costs, limited application, and rigidity of operation are compensated for by the volume and the uniformity of the production.

THE flat-hearth traveling oven is ideally suited to mass production, not only in the wholesale baking industry but also in the food industry in general. It is readily adaptable to plant layouts in which the oven is a part of the conveying system carrying the product through the factory, and can easily be made automatic in operation where the food processed is suitable for mechanical handling. Its use for toasting cornflakes and baking beans in cans indicates the range of its possible application.

In the baking industry its economical employment is limited to large wholesale plants located in densely populated centers where mass production of standard products can be absorbed. As the oven capacity now installed in this field is more than sufficient to take care of the demand for some time to come, the purchase of flat-hearth travelers can be justified only to replace less efficient and less economical ovens now in use. With its dough-in-one-end and bread-out-of-the-other-end action, its adaptability to automatic loading and conveying systems, its ability to handle anything from a 10-minute cookie to a 2½-hour fruit cake, the traveler is unequaled by any other type of oven for wholesale production.

This oven is variously referred to in the trade as "traveling plate," "tunnel" or "flat-hearth traveler," but usually as "traveler."

From an engineering standpoint the traveler is of general interest because its development was responsible for practically all the advances in modern oven building. Steel-clad construction with its light weight, heat insulation, thermostatic control, indirect heating and external firing were perfected first in this oven. The resulting freedom from the "flash-heat" bugaboo, lower first cost of oven, lower cost for building foundations because of the reduced weight, reduced fuel consumption and reduced labor costs, have been of great economic importance to the baking industry.

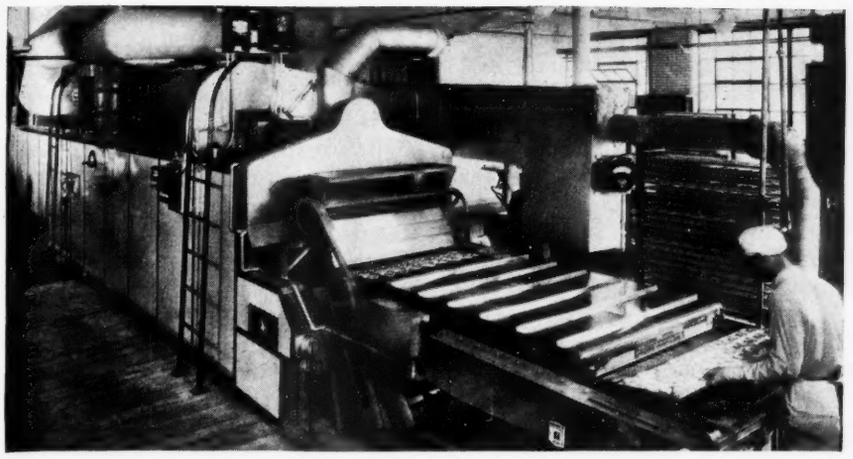
The first travelers were, in principle, the old heavy brick peel ovens elongated and provided with traveling hearths. These were followed by steel ovens adapted from the steel ovens used in other branches of industry. The usual wall construction is an outer steel panel finished in various ways; insulation consisting of 7 to 9 in. of light-weight, high-grade heat-insulating material and an inner shell of steel panels. In some cases the inner panels are of insulating material such as "transite," while in others—apparently as a compromise with the "heat reservoir" fetish of the old brick-oven construction—the bake chamber is lined throughout with heat-absorbing brick.

The conveyor consists of two endless roller chains located at the sides of the baking chamber, running lengthwise of the oven on rails and over sprocket wheels at each end. An electric-motor drive through speed reducers and a variable-speed transmission operates through the shaft and sprockets located at the delivery end, thus applying the power as a pull on the loaded half of the conveyor.

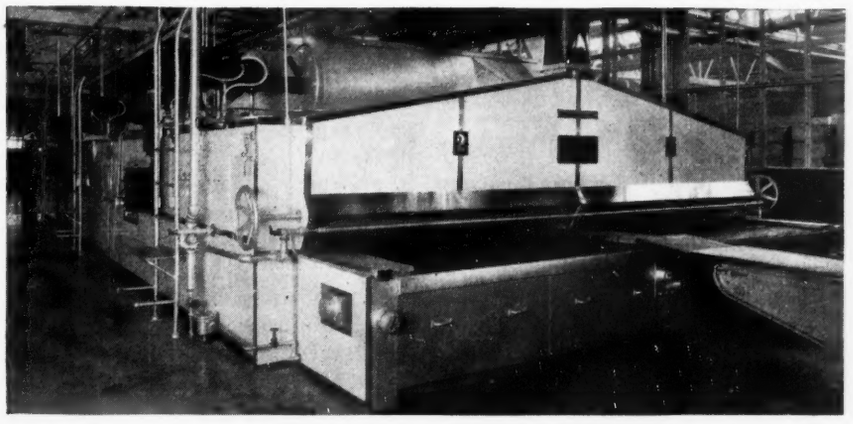
The hearth is made up of a series of crosswise plates rigidly attached to the side chains. These plates have a width approximately equal to the length of a link of the chain, and, by means of overlapping joints or close fitting, form a continuous level surface when in a horizontal position. Proper construction makes this the equivalent of a solid continuous hearth, so that hearth bread baked on it will not show marks where the plates join. It is the only type of conveyor oven in which the hearth is rigidly attached to the chain.

There are variations of hearth construction for special uses. Instead of steel flights, solid steel bands and wire mesh are used for cookies, pretzels, matzoths, and similar products. For biscuits the chain traveler is used without steel flights, the loaded biscuit pans being temporarily attached to the chains. These ovens are made in various widths to accommodate 2, 3 and 4 26-in. biscuit pans crosswise.

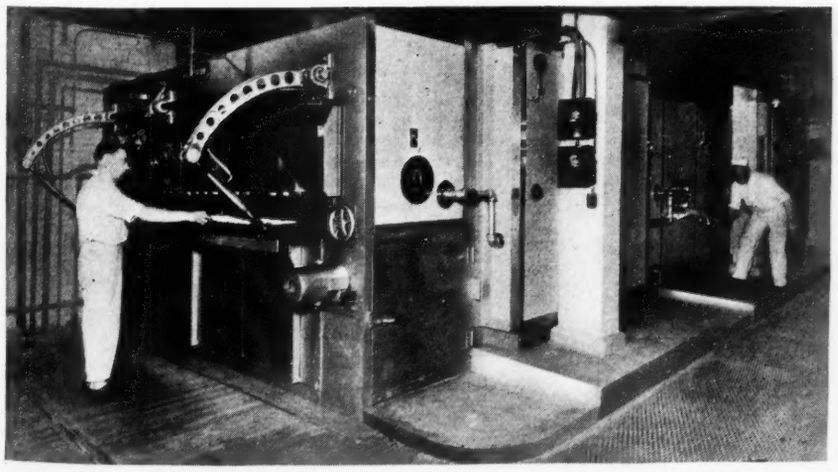
Lacking the heat-absorbing brick,



The sudden demand for pretzels led to the installation of flat-hearth traveling ovens with production capacities as great as 1,800 lb. of pretzels per hour.



For biscuit or cracker baking the Salerno-Megowen Biscuit Co., Chicago, Ill., chose an oil-fired traveling plate oven 61 ft. long by 14 ft. wide with a production capacity of 4,000 lb. per hour. The baking hearth is divided into two conveyors each 7 ft. wide.



In modernizing its Roxbury (Mass.) plant, General Baking Co. installed a 90x10-ft. 2-in. oil-fired traveler of the indirect-recirculated-heat type for bread baking. Note the motor-driven pan pusher to give semi-automatic loading and the protecting curb to prevent bumping of the oven with pan trucks. Oil burners are mounted on top of the oven.

and fired by gas, the steel-clad traveler was the first heavy-duty bake oven to which thermostatic control was successfully applied. Divided into approximately 20-ft. control zones throughout the length of travel, these sections were individually controlled, the top and bottom heats being independent of each other. This was the first time the possibility of thermostatically controlling several zones in the same chamber was demonstrated to the baking industry.

Many of the larger travelers are equipped for automatic or semi-automatic loading of pan bread. With full automatic equipment, a conveyor delivers the panned dough to the feed end of the oven in a compact row and level with the hearth so that a horizontal reciprocating bar "pusher" dropping down behind the pans loads them uniformly onto the traveling hearth. In semi-automatic operation the pans are placed by hand on the oven shelf and then loaded by the pusher. The pusher is operated by the revolving shaft of the oven or by a separate electric motor with variable speed control. The pusher speed is synchronized with the oven-travel speed and is adjustable for various lengths of pans.

Full automatic loading is desirable in a plant having sufficient output to justify the use of a traveler for pan bread exclusively. The permanently installed conveying equipment makes it impossible to load the oven by hand or peel, and therefore full automatic bread ovens cannot be used for other than panned goods. The semi-automatic equipment, however, is a simple means of assuring a completely and uniformly loaded oven, while at the same time permitting the use of the oven for baking goods not suitable for automatic loading.

Conveyors at the delivery end of the oven carry the baked products away from the oven. Pan bread must be dumped by hand, one conveyor carrying off the pans and another the bread.

With these automatically operated ovens an approach was made to an automatic plant, but not with the expected saving in labor. As one bakery engineer expressed it, "For every baker they could do without they had to hire a mechanic." An interesting comment in these days of criticism of the machine as an eliminator of jobs.

The recognized standard hearth widths of the regular flat hearth traveler are 6 ft. 10 in., 9 ft., and

10 ft. 2 in. The usual length of baking space, in 5-ft. increments, runs from 40 to 130 ft. Usually the ovens up to 60 ft. are used for cake and similar work. A few 130- and 140-ft. ovens have been built, but they seldom exceed 110 ft. for any purpose.

A representative list of lengths, widths and rated capacity in pounds of bread per hour follows:

	Width		
Length	6 ft. 10 in.	9 ft. 0 in.	10 ft. 2 in.
40 ft.	1475	....	....
50 ft.	1850	2425	....
60 ft.	2200	2900	3300
70 ft.	2575	3400	3900
80 ft.	2950	3950	4475
90 ft.	....	4450	5025
100 ft.	....	4950	5600
110 ft.	....	5450	6150

The first brick travelers were coal-fired, indirectly heated through flues. Later they were direct-fired with gas by means of burners distributed throughout the length of the oven, above and below the hearth. The first steel-clad ovens were direct-fired in the same way. Due partly to objections to combustion gases in the baking chamber, but mainly on account of the explosion hazard, indirect methods of gas-firing were developed. At first efforts were made to inclose the individual burners in separate flues or combustion chambers, but external firing chambers with flues or steam pipes for distributing the heat throughout the oven are now the usual practice.

The development of indirect heating was accelerated by the desirability of using low-priced oil for heating, and at present prices, oil is the more economical and more generally used fuel. Electricity was popular at one time and was successfully applied in both large and small ovens, but proved too high priced. The formula, "$1 city gas equals 1-cent electricity" is still a good rule-of-thumb estimation of relative cost.

In the traveling oven, with its large production, mistakes as well as successes were on a much larger scale and all the old baking problems assumed greater importance. The application of steam became an especially acute problem. Second only to fuel in its effect on operating costs, providing for the proper application of steam to the dough is one of the most troublesome points to be solved in oven building.

More exactly stated, the problem is to deposit a film of moisture on the surface of the dough to produce the glazed surface desired for rye bread, rolls and some other hearth and pan breads. Applied as the dough enters the hot oven, this moisture causes dextrinization and saccharification of the starch in the crust, which gives the desired effect. It is also used to produce the proper break and shred in split-top bread.

Most of the difficulty has been caused by injecting steam at a too high pressure into a too hot oven. As the moisture is deposited on the dough by condensation when the steam comes in contact with the dough, which has a temperature of approximately 90 deg. F. when placed in the oven, it is obvious that a low-pressure saturated steam must be used. However, if the steam pressure is too low or carries entrained water, so that condensation takes place before the steam reaches the dough, drops of water form. These drops, striking the dough, will penetrate the skin, spread underneath the surface, and form blisters.

If the steam enters the oven at a too high pressure, or the oven temperature is so high as to raise the temperature of the entering steam—superheat it—so that it will not condense in contact with the dough, or a moisture film is formed on the surface but is "burned off" too soon, not only will it fail to produce a glaze but an unnecessary amount of steam will have been used, with consequent unnecessary costs.

Observation indicates that the

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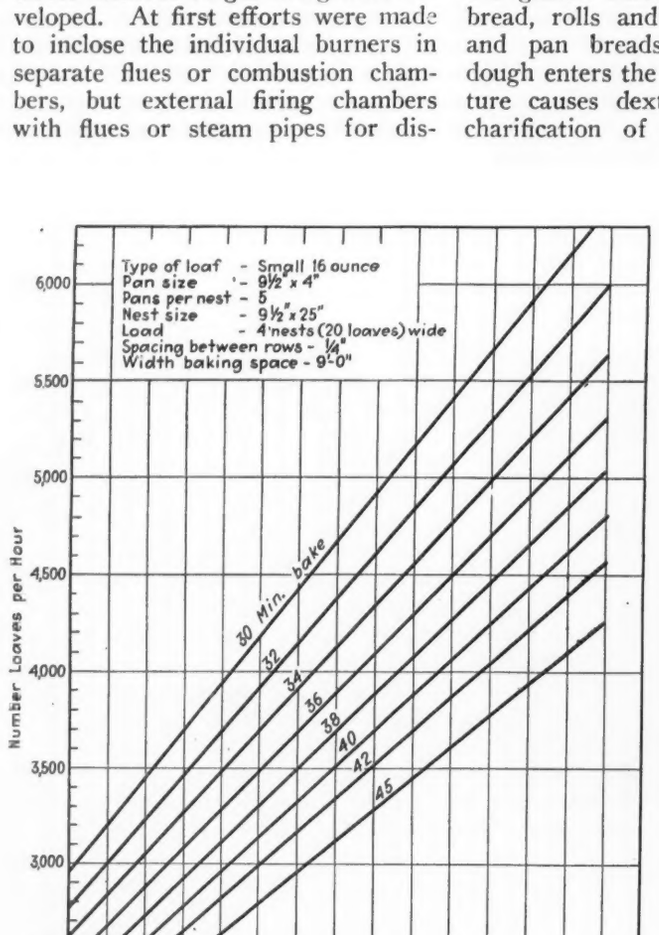
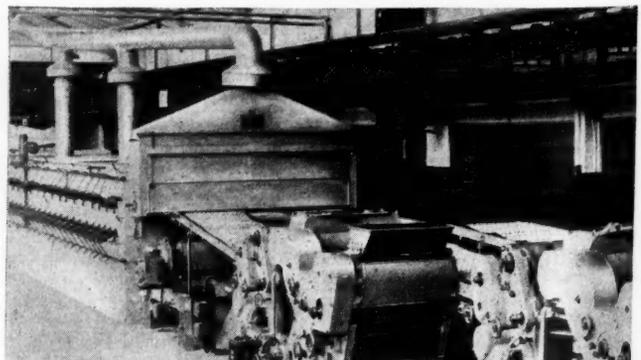


Surprising economies in oven operation are obtainable through the proper correlation between oven length and baking time at a given baking temperature. With proper heat distribution throughout the baking space, doubling the length of the oven increases its production capacity 100 per cent.

◆

A recent development in travelers is the automatic unit in which the baking hearth is a continuous band of special steel. Ovens may have as many as three separate baking hearths, each handling at the same time a different class of goods but requiring the same baking temperature.



Choose the RIGHT MEANS *to Combat Your* PLANT PESTS

By **HARRY STINER**
Albany, N. Y.

● In the three preceding articles of this series, Mr. Stiner has discussed those phases of pest control which are more of the preventive than of the curative classification.

● However, as is suggested in this continuing series of articles, a successful campaign to keep the food plant free from pests depends upon systematic use of both methods of attack.

● Before taking up each individual pest and dealing with it in detail, it is thought advisable to familiarize the readers of FOOD INDUSTRIES with the agents that have proved effective in combating the generally known pests.—Editor.

IN SUBSEQUENT ARTICLES of this series we shall describe the more common pests encountered in food plants and shall recommend various methods and insecticide formulas for their control and eradication. As the formulas will be referred to frequently throughout the series, for the sake of economy each one will be given in detail in this and the next succeeding articles and will be designated by number only in the remaining articles.

1—Roach Spray:

Commercial kerosene ...	50 gal.
Oil of wintergreen	51 oz.
Rosin oil (good grade)..	2 lb.
Propylene dichloride — Carbon tetrachloride mixture	2 gal.

This formula makes an excellent and inexpensive contact spray for any form of crawling insect or spider. It is not a fumigant, however, so must be applied direct. As it contains kerosene, it should not be used on foodstuffs nor around an open flame. It should cost about 20 cents per gallon.

2—Roach Dust:

Commercial sodium fluoride.	5 lb.
Ordinary white flour	1 lb.

Be sure the two materials are thoroughly mixed before using, and keep in moisture-proof containers. It should always be forced inside the roach nest with a hand blower when possible; otherwise in an even coating around it. Do not sprinkle or sift the material about, as it will have little effect. Sodium fluoride is a fairly strong poison; therefore must not be thrown on foodstuffs or containers and should always be stored well away from them.

3—Poisoned Roach Bait:

Yeast	½ cake
Sugar	½ lb.
Sodium arsenite	2 grams
Water	1 quart
Cereal	Sufficient

Dissolve yeast, sugar and arsenite in the water, then stir in enough cereal to make a thick gruel.

Cover the bait thoroughly to prevent larger animals from getting it. This formula makes an effective bait for roaches and several other pests, especially in places where other foods are scarce.

4—Poisoned Cricket Bait:

Sodium arsenite	¼ lb.
Molasses	1 pint
Water	5 pints
Bran or other fine cereal	Sufficient

Mix the arsenite, molasses and water, then stir in enough cereal to make a heavy mush.

Cover the baits thoroughly or spread thinly when applying. Brush into cracks or under objects if practicable.

5—Fly Spray:

Commercial kerosene ...	8 gal.
Oil of wintergreen	8 oz.
Rosin oil (good grade)..	5 oz.
Oil extract of pyrethrum (10 lb. grade)	1 gal.

This formula makes an effective fly spray, or for other aerial insects, and may also be used as a contact insecticide in place of No. 1. As with No. 1 spray, however, it should not be used on foodstuffs nor around an open flame. It should cost about 50 cents per gallon. The ordinary commercial fly sprays may be used in its stead, but the cost will be considerably higher.

6—Ant Poison:

Granulated Sugar	3 lb.
Water	3 pt.
Tartaric Acid	2 grams
Benzoate of soda	2.8 grams
Sodium arsenite (C.P.).	5 grams
Strained Honey	1.5 lb.

Place water, sugar, acid and soda in a granite kettle. Boil 30 minutes, cool down some. Dissolve arsenite in ½ pint of hot water and add to the sugar solution. When all is cold, add the honey and stir thoroughly.

Another formula for this insecticide is:

Invert syrup	6 lb.
Water	1½ lb.
Tartaric acid	2 grams
Benzoate of soda	2.8 grams
Sodium arsenite (C.P.).	8 grams

Place syrup, water, acid and soda in a granite kettle. Bring to a boil. Dissolve arsenite in ½ pint of hot water and add to the syrup solution and stir thoroughly when cold.

The first of these two formulas is known as the U. S. Government Argentine ant syrup. It is used extensively in districts infested with this pest. The second formula is similar but stronger and cheaper to make, and will often prove more effective as far as the large ants infesting the average food plant are concerned.

Each of the poisoned syrups should always be used in a distinctive container with a closed top. Although only relatively mild poisons, they should nevertheless be kept from other animals. Small tin cans with a tight lid may be used effectually for applying them. First punch a few holes near the top with an eight-penny nail, then fill one-third full with excelsior or similar material and on this pour one tablespoonful of the syrup. Set the containers (several should be used) in secluded spots where the ants are found—and refill the cans every two weeks until the ants disappear. Both of these poisons, being weak, act in an accumulative manner, permitting the workers to carry quantities of them back to their nests, where they feed their queen—to their sorrow.

Several ant syrups based on the U. S. formula given above are available on the market and, when they

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Photo-Electric Control

AN *Essential*...OR JUST A *Frill?*

By ROBERT W. CARSON
Assistant Editor
Product Engineering

TO THE factory executive and maintenance department the important consideration in the selection of a machine with photo-electric control is the operating cost and service expense, not the "romance" or novelty of the photo cell. From the active publicity given to any and all "electric-eye" installations it is well known that many unusual and novel functions can be performed by photo-electric devices. But a successful application, as a standard part of a production, testing or inspection machine, is limited by the small amount of power supplied by the photo cell and the expense of development or experimental work, as well as the added complication and maintenance that may be involved. Granting the possible use of a photo cell in almost any machine, the practical question is, Will some other less complicated device do the job as well at less cost?

The answer is that there are three types of machine operations that offer unusual opportunities for photo-electric devices. These three uses are: (1) in machines where it is necessary to eliminate any physical contact between the machine and the controlling function, (2) in controls requiring unusually high speed operation, (3) in devices that can be controlled only by reflected or transmitted light. When problems of maintenance and limitations in cost and complication are recognized, as in the following examples, photo cells have an undisputed place as a standard part of a machine performing one or more of these three functions.

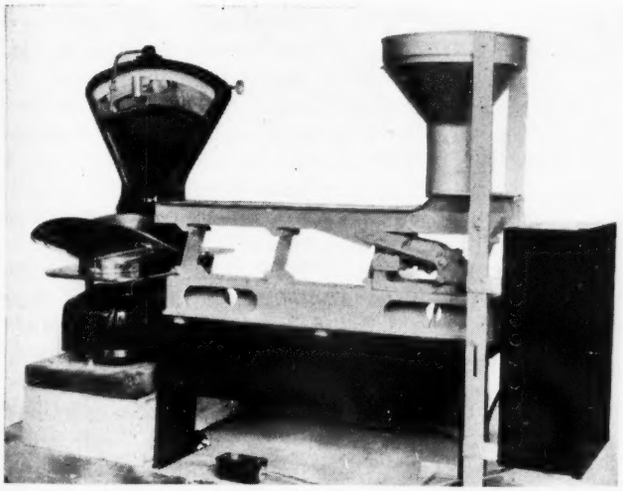
Illustrating a highly successful application of the first type, the precision weighing device, shown in Fig. 1, is controlled by interrupting a light beam. Thus, the operation of the cut-off mechanism in no way interferes with the operation of the scale, and the day-after-day accuracy is considerably improved over the best manual operation. By designing the photo-electric control so that it is unaffected by wide variations in voltage, only a daily check on the calibration of the amplifier is required. The use of a compact inclosed amplifier with amplifying tubes and relays operated at conservative ratings reduces maintenance to little more than is required for other electrical equipment. Also, the short light beam makes it possible to use low-power lamp bulbs burned at less than rated voltage, giving increased life. Periodic replacement of inexpensive lamp bulbs and tubes eliminates any shutdowns caused by failure of these parts. The successful use of photo cells in automatic weighing devices is thus a combination of the advantage of the unresisting light beam and careful design in reducing maintenance.

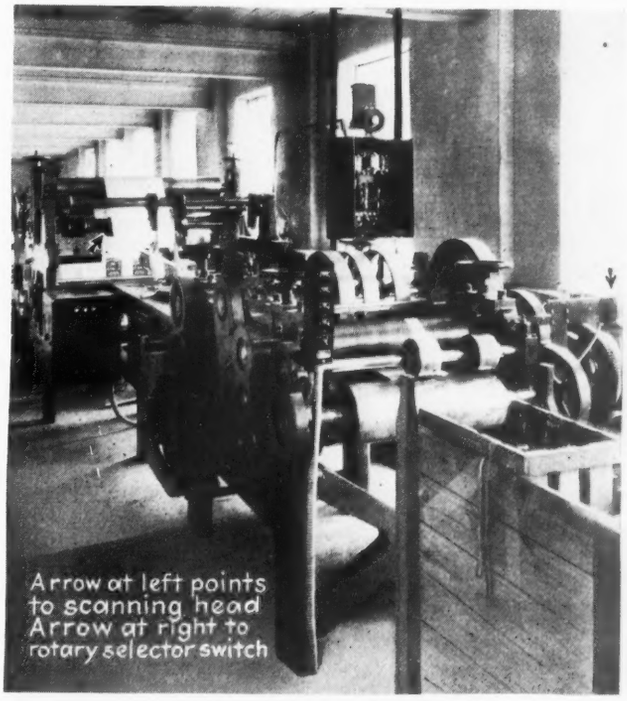
For unusually high speed operation, the second type of application, the paper-bag-making machine shown in Fig. 2 uses a photo-electric control that responds to a light interruption of less than 0.005 second duration. In this machine the paper bags are folded from lengths of paper cut off from a continuous roll printed with the design that appears in the proper place when the bag is folded. The photo cell, illuminated by light reflected from the paper, controls the relation between a rotating cutter blade and the paper feedrolls so that the printing always comes in "register," or in the proper place on the bag. Mechanical movements and electrical contacts cannot operate at this high speed, but the photo cell, when used

with grid-controlled rectifier or relay tubes, is capable of responding to several thousand impulses per second, if necessary. Care in designing the electrical circuits combined with the instantaneous response of the photo-cell amplifier and relay tubes makes this high-production machine possible.

Operation from transmitted light, the third advantage of photo cells, is illustrated in the packaging machine shown in Fig. 3, designed for printed transparent wrappers. The recent development in the use of printed processed cellulose has come hand in hand with the use of photo-electric cutoff mechanisms. Since roll transparent wrapping material is needed for high-speed wrapping machines, each wrapper must be cut off from the roll with the printing located at the proper place on the wrapper, so that the wrapped product will have the design properly placed. A light beam shining through the strip from the roll of printed wrapping is interrupted by a register mark printed at the edge of the sheet on each wrapper. Interruptions in the light are then arranged to operate the cutoff mechanism so that all wrappers are identically spaced. As in the two other photo-cell applications described, particular care in the design of the device has reduced maintenance to no more than that needed for other electrical equipment. In this design electromagnetic relays are replaced by relay tubes giving an extremely high speed of response as well as control by transmitted light.

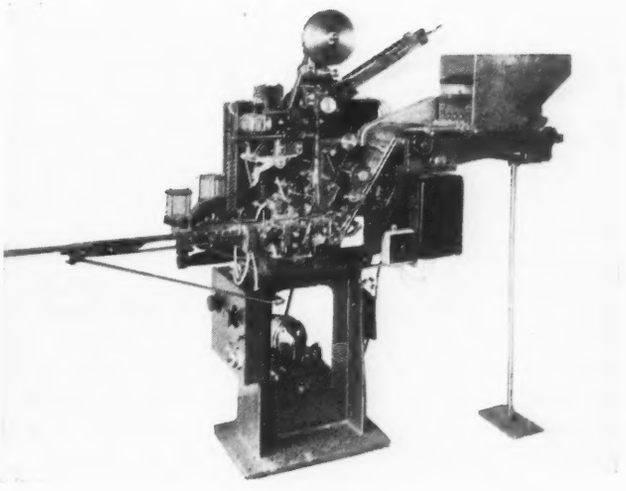
In these three definite fields of machine operations, photo cells offer unusual opportunities for greater sensitivity, increased speeds and new functions. But in these designs the photo cell itself is only a part; the ingenuity with which the cell is applied determines the success of the machine in the plant.





1 PHOTO-ELECTRIC CONTROL on vibrating package-filling machines gives more rapid weighing with less weight variation than does manual control. End of pointer covers slot over photo-cell housing and stops vibrator when desired weight of material is in scale pan. Operation of control is unaffected by vibration or temperature and voltage variations.

2 FOR HIGH-SPEED OPERATIONS photo-electric control will respond to a light interruption of less than 0.005 second duration, which is much speedier than by other means. In the manufacture of bags from printed paper in rolls, precisionlike correlation of action between rotating cutter blade and the paper feed rolls is essential to keep the printed design in desired place on each bag.



3 IN THE OPERATION of high-speed machines using printed, transparent wrapping material from a roll, relay tubes instead of electromagnetic relays are used to get register control by transmitted light. A register mark at edge of wrapping material interrupts passage of light through strip and actuates cutoff mechanism to assure uniform and equally spaced cutoffs for each wrapper.

Bakers' AND Canners' Codes Finally Heard

CANNERS Ask for Unrestricted Hours of Employment

AFTER many months of fruitless effort under the jurisdiction of A.A.A., the code proposed by the National Canners' Association to govern the entire canning industry came to a public hearing under N.R.A. on Feb. 7 and 8. The outstanding feature of the proposed code is its provision for practically unlimited hours of labor during the packing season—a provision which was bitterly opposed by the American Federation of Labor, Consumers' League, Consumers' Research, National Home Economics Association and others who spoke in behalf of labor.

Objection to inclusion under the code came from Mayo Shattuck, counsel for National Fisheries Association. Sea-food canners, he stated, were in the anomalous position of being placed under two different codes and, furthermore, the salmon canners desire a wholly separate code. The California sardine canners, whose organization was heard under the fisheries code on Jan. 29, 1934, had been informed at that hearing that they must submit to decidedly limited hours of labor during the packing season, in contrast to the canners' code.

A long array of industry representatives presented testimony to show the necessity of working unrestricted hours during the short production period while packing seasonal crops; how impossible it is to control production to a degree sufficient to operate plants on a single shift of eight hours; and stressed the inability of the majority of canners in small towns to obtain sufficient labor for two shifts.

International Union of Operating Engineers protested against this claim and cited the case of refrigerating engineers in the Yakima (Wash.) district working on an 84-hour week.

Canners' Industrial Union No. 1 of Camden, N. J., asked for a 35-hour week with no exemptions, basing their case only on the employment experience of Campbell Soup Co.

William Green, president of American Federation of Labor, acting in his capacity as member of the Labor Advisory Board of N.R.A., spoke at length in criticism of the canning industry, declaring that canners wilfully refused to put on more workers by shortening the work week and cited the experience of California and Wisconsin, where special laws make it very costly to operate workers for long hours in canneries. His implied idea is an ultimate 30-hour week in this industry, to be reached gradually. He also opposed the choice of July 15, 1933, wages rates as a base and asked that July 15, 1929, be used instead. Other changes he asked for were removal of regional wage differentials, elimination of piecework, a new audit system, grading on labels, non-voting labor member and a consumer member on the code authority, and a labor complaint committee.

Small Southern canners justified their low wages (8 or 9 cents per hour before P.R.A. and 15 to 20 cents an hour afterward) on the ground that living costs were very low in their territories. In Akansas, it was stated, a 3- or 4-room house could be rented for $5 per month. Pork costs 5 cents per pound and hind quarters of beef 4½ cents.

Miss Mary Dewson, of Consumers' League, condemned the canning industry as poorly managed, in the following words: "I ask you to remember that yours is the most backward industry in the country of which I have any knowledge, unless it be such a sweatshop trade as the artificial flower and feather industry." She asserted that canners never really tried to control the arrivals of their raw material at plants or never tried to procure adequate labor supplies in order to operate on two shifts.

E. E. Chase, of Richmond Chase Co., San Jose, Calif., asked for elimination from the code of all references to advertising allowances.

Consumers' Advisory Board of N.R.A. asked for many changes in the code and demanded the inclusion of quality grades on labels. Prices are not reliable consumer guides, and "tests have also proved that the widely or nationally advertised brands are not necessarily superior to the unadvertised products. Moreover, the quality of a given brand does not necessarily remain uniform from season to season or even during the same season."

Several representatives of women's organizations as well as the Bureau of Home Economics and Bureau of Agricultural Economics also asked for quality grades on labels. The testimony of Dr. White, Chief of Food Control, Food and Drug Administration, indicated that he believed in graded declarations, but he was not very enthusiastic in supporting his belief. Of the consumer organizations, only American Home Makers' Association, headed by Mrs. Franklin W. Fritchey, was in favor of deferring grade requirements until such a period as the industry could recover financially.

BAKERS *Divided on Consignment Selling and Use of Premiums*

WHEN N.R.A. Deputy Administrator White recessed the bakers' code hearing at 6:15 p.m., Jan. 31, the baking industry had reached the goal for which it had been striving since last August. It had dumped its troubles into the lap of the Administrator, a step toward the easing of its pains that had not been attainable under A.A.A.

The climax of the two-day hearing came in the afternoon with the alignment of forces for and against Sec. 12, Art. VII, which proposed to eliminate consignment selling in the baking industry. Chairman Stude, of the National Bakers' Council, in presenting this section, recommended its approval because "the original plan to exchange fresh breads for unsold bread left on dealers' shelves has in many markets been abused. It has stimulated overproduction. It has increased the cost to bakers. This returned bread has in many cases reentered the channels of trade to the detriment and sometimes to the injury of other branches of the industry." He regarded that section the most highly controversial one in the proposed code.

Although this section had the approval of the National Bakers' Council, representing 85 per cent of the baking industry exclusive of biscuit, cracker, pretzel and ice cream cone manufacturers, and had received an approximate 8 to 1 vote of approval in an industry vote, much opposition was raised against it by large wholesale bread bakers, wholesale cake bakers, voluntary chain-store organizations, grocers and retail distributors. Several amendments were presented qualifying its terms and numerous briefs were filed for and against it. Since the hearing additional briefs and presentations have been submitted and at the informal conference held in Mr. White's offices on Feb. 14, this subject was reported to have dominated the discussion.

Sec. 6, Art VII, ruling against the use of premiums or coupons to aid the sale of bakery products, brought forth a storm of protest from the independent wholesale bakers. These bakers contend that only by the use of premiums or coupons are they able to compete successfully for business against large wholesale bakers who can finance national advertising over the radio, in the newspapers, and on billboards. They also maintain that the amount of money spent for advertising purposes through the use of coupons and premiums bears a more equitable relation to sales than does money spent for other forms of advertising based on anticipated sales.

Girard R. Williams, Williams Bakery, Scranton, Pa., was among those who spoke against the use of premiums. He is an independent wholesale baker and his company operates two plants which have spent $303,000 for premiums in the past six years and one plant which does not use premiums. Other bakers who had used premiums or coupons spoke against their use and announced their discontinuance of the practice for the good of their business and the baking industry. While not the most controversial subject discussed during the hearing, this section had the attention of the packed room during the forenoon of the second day.

Under Chairman Stude's attorney-like leadership, the presentation of the proposed code moved along with dispatch. In the main, objecting and supporting proposals were made briefly in person or by the filing of briefs. The only serious hold-up in the hearing's proceedings came in the afternoon of Jan. 30, when the labor group made its first concerted drive for drastically shortened hour-weeks and increased wages in the food-manufacturing-code provisions.

The code proposed the same hours per week and the same basic minimum wage as imposed upon the industry under the P.R.A. These provisions had not been satisfactory under P.R.A., due to lack of policing. Under N.R.A., with code authority policing, the National Bakers' Council hopes for better results. The labor group, under the leadership of A. A. Myrup, representing the Bakery and Confectionery Workers' International Union, vigorously attacked these hour and wage provisions. In a lengthy and detailed presentation, the labor group asked for the maximum 7-hour day and 35-hour week for both machine and handcraft shops with re-examination of the industry situation at the end of 90 days from the effective date of the code, and an adjustment in hours of work per day and per week to absorb any unemploy-

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PACKERS *Handed a Marketing Agreement*

THE meat-packing industry, after months of negotiation with Secretary of Agriculture Wallace, has been handed a draft of a marketing agreement which contains little, if any, of the provisions for which it has been contending. However, there is ground for negotiation of special agreements on hogs, cattle and sheep and some provision for exemption from the anti-trust laws to allow for combinations to secure savings in distribution. These provisions are all subject to the approval of the Secretary of Agriculture, however, and the savings must be shared between consumers, processors and producers.

The agreement contains, in full, the disputed provisions for access to company books by officials of the A.A.A. Virtually every move that is made for easing conditions to the packers must have the approval of the Secretary, who may also abrogate the agreement on five days' notice; the parties to the agreement may also abrogate it, on the motion of three-fourths of the signatory processors.

Secretary Wallace has held that there is no need for a marketing agreement as the sole means of handling the packing industry, but offers, in the present plan, the possibilities of developing equitable quotas for processors in order to stabilize wholesale prices and eliminate the chiselers. This would be done by recommendations (with the concurrence of the Secretary and the appropriate producer's committee) to

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Allocation... *YES... or NO*

...Canners Can't Agree

IT'S TIME to wonder whether A.A.A. will not hand marketing agreements to the canners, now trying to write their own. Developments since the Chicago convention of the National Canners' Association certainly point that way. Opposition to allocation of pack is growing and it is obvious also that, following the good season last year, this method of control will not hold down the pack this year.

Objectors to allocation and impounding of excess contend that fixing minimum prices to growers is all that is necessary to curb the pack. A.A.A. is skeptical. Fixing the price to the farmer is fine if the farmer gets his money. Just to make sure, the A.A.A. may stipulate that the grower be paid a substantial amount early in the season. Canners would have to pay him before they pay the can companies and the bankers.

Besides protecting the farmer, this requirement for prompt payment also would limit the pack. Canners would think twice before paying for and packing crops that they might not be able to sell at a price covering their outlay. No substantial credit would be available to them on such a risk.

A.A.A. may also prescribe the basis of figuring prices to growers. Adding a "guaranteed" increase to last year's contract prices is one proposal. In the case of corn, to raise last season's contract price by 40 per cent, with a minimum increase of $2 a ton; 35 per cent if last year's contract price was over $7.

The committee of tomato canners was still in conference with A.A.A. officials on Feb. 19, with a fair prospect that they would be ready to submit a proposal for a marketing agreement to hearing soon. The proposed pea agreement was scheduled for hearing in Chicago on the same date, and hearing had just been concluded on the corn-canning agreement in Washington. This hearing brought out more objectors than supporters, although the committee sponsoring the proposed agreement claimed to represent a majority.

Declaring that there is no emergency in the corn now, that prices are high and that nobody can predict what conditions will be next year, Edward P. Cosgrove, of the Minnesota Corn Canners' Association, urged that the section on allocating areas and quotas be stricken from the proposed agreement. W. A. Miskimen, representing the Illinois Canning Co., suggested a compromise under which neither a canner's 1934 acreage nor his pack would be greater than the annual average for 1928-33. H. J. Humphrey, of the New York State Canners' Association, asserted that impounding the excess over quotas would depress the market. He suggested destruction of unwanted surplus, acreage to be paid for out of a common fund.

H. K. Bachelder, chairman of the committee, stood his ground against a variety of objections to allocation and impounding, declaring that the committee does not consider that minimum prices alone can give assurance that the total pack of the industry will be limited to an amount that can be sold at fair prices. But nothing, in the opinion of R. C. Paulus, representing the Northwest Canners' Association of Oregon, will prevent the season's pack from going to 20,000,000 cases. In view of the administration's money policy, many canners who have money feel that they can't lose by allowing their overpack to be impounded, because prices, he said, probably will be the same or higher when the surplus is released in 1935.

Other objections were that allocation would prejudice the canner with established sales outlets, that it would serve to stimulate rather than control production, as canners in bad,

(See column 3, page 119)

SUGAR TROUBLES

The Washington Picture

THE NEW SUGAR PLAN is an "attempt to please everybody," with correspondingly little chance of full success. It will attempt to reach the following, obviously mutually conflicting, objectives:

1. Assist in solving Cuban troubles by raising the price of Cuban raw sugar to a profit level.
2. Secure a tariff adjustment without opening other tariff schedules to debate.
3. Prevent a price rise of sugar in the United States at retail for householders and farmers, particularly farmers.
4. Place a processing-tax burden on the refiners for the benefit of beet and cane growers, who will be asked to restrict their domestic production.

In the earlier sugar plan extended negotiation brought compromise agreements, which really pleased no one thoroughly. Tariff Commissioner Coulter was made the goat when that plan was recommended by Secretary Wallace for disapproval by the President. And it was disapproved. A new scheme is recommended by the President, seemingly in some detail, but with plenty of loopholes and an obvious invitation to Congress to amend the plan to suit legislative judgment. This last is, of course, an invitation to play politics. If Congress, as expected, does make generous amendment, the administration can then explain away the untoward consequences which are inevitable in

some, perhaps several, directions. Obviously it is politically unwise to assume full authority for any sugar plan, as inevitably some important groups are going to be displeased.

In the food industries there may be some benefit through stabilization for beet-sugar and Louisiana cane-sugar producers. The magnitude of the aid will depend largely on the size of the quotas ultimately adopted. If stabilization occurs at too low a tonnage level, then growth obviously will be prevented. Western beet producers, ably represented in Congress by the Western bloc of senators, want to have the point from which curtailment is measured be the peak crop of 1933. Proposals for quotas are about equal to the average production of the past five years. Hence use of this latter as a base from which to calculate bonuses to producers is unsatisfactory to beet growers, because it would result in substantially no cash.

If the tariff cut occurs, there is some hope that the retail price of sugar can be held without increase and yet some further benefits be given to Cuban producers, despite the burden of processing taxes. But if the processing tax imposed on refiners just equals the tariff cut on imported raw sugar, there is likely to be no help for Cuba. Even then there might be a retail price increase, as it is difficult to prevent more than the actual processing tax from carrying through by mild pyramiding and percentage markups of trade.

It is seriously proposed, and perhaps legally necessary, to make sugar a "basic" commodity, if these plans are to carry through. If sugar is so recognized, in order to give legal basis for processing taxes and bonuses, then a variety of other restrictive and regulatory measures of A.A.A. may follow. Certainly marketing agreements with more detail, and teeth, would seem to be indicated.

The only sure thing is a further intensive battle, with bitter controversy and much behind-the-scenes political log-rolling.

Hostility to SUGAR *Program May Force Revision*

A STRONG undercurrent of opposition that probably will lead to major revisions was apparent with the opening of hearings on the administration's sugar program before the Agricultural Committee of the House of Representatives. Objections to the legislation came from various sources in varied forms. They centered on two fundamentals in the bill: (1) its broad general policy of attack against a domestic tariff-protected industry; and (2) the czaristic powers extended the Secretary of Agriculture.

Against this opposition is lined up the administration "steam roller" that has *not* failed so far. The sentiment of this faction might well be viewed through the actions of Chairman Marvin Jones (Texas), of the House Agricultural Committee. Even though his is normally one of the foremost refinery States and is now faced with plants entirely closed or operating on a seriously curtailed basis, the Representative came to the aid of administration witnesses several times when thrusts at the program became too pointed. "If we don't keep tariff out of this, we won't adjourn hearings this summer," the chairman interjected during a severe gruelling of a Department of Agriculture expert who had been sent to defend the measure.

Administration witnesses tried to confine interest in the legislation to their view of "the aid" it will give domestic producers from a demoralized sugar market and the consumer protection afforded. However, they frankly admitted that its real purpose is to "freeze" domestic sugar production, "because it is an expensive industry to the consumer."

The "economic justification" for limiting domestic production of sugar, according to the administration witness, is the cost of expansion to consumers in the tariff duty, and the cost to the rest of agriculture through limiting their possible exchange with foreign sugar-producing areas.

A question from a committee member whether this theory meant that all tariff-protected industries are not economically justified was evaded.

In the last analysis, according to the administration view, the program is to call a halt on expansion of a protected industry and use the A.A.A. to break the blow of an immediate stop.

"The purpose, then, is to give us a shot in the arm and then ease us out of business while we are still unconscious," said Representative Fred Cummings, Colorado Democrat, militant leader of the sugar States' opposition to the program.

The beet and cane State bloc in Congress has already launched a program of opposition. They are agreed that the legislation should be amended to provide for quotas to other areas after continental producers receive the share of consumption they can supply, and for an appropriation of $25,000,000 for bounty payments to continental producers on the 1933 crop.

It is conceivable and, the Department of Agriculture witness admitted, there is some danger, that the United States sugar consumer will be at the mercy of foreign producers if the administration program is carried through to its ultimate purpose.

Allocation— Yes or No?

(Concluded from page 118)

financially, will gamble on an increase in prices and that plants bought for taxes will be put in operation. It was argued that the agreement will not prevent price-cutting, because bankers are the sales managers for many small canners.

Minimum price schedules were objected to by New York and Maryland growers as too low and out of line with other districts. Howard A. Orr, member of the sponsoring committee, submitted an amendment which would allow canners buying on grade, rather than on a flat basis, to pay less than the minimum for inferior grades, provided that the total payment to growers would be equivalent to the minimum. Mr. Cosgrove suggested that instead of the minimum price basis set up in the proposed agreement, 1933 contract prices be taken as the base for uniform increases. Establishment of minimum prices for new varieties was proposed by several canners. T. B. Symons, director of extension of the University of Maryland, requested exemption of home and 4-H club canning.

News and Views of the Copeland Bill

Now It's S. 2800

NEW food and drug legislation is losing speed in the legislative grind. Opponents of the Copeland Bill are gaining ground by causing delay. This is half the battle, but it is still too early to predict that the bill will not reach final enactment before Congress adjourns, particularly since it is by no means certain yet when Congress will adjourn.

When Senator Copeland, as chairman of the subcommittee, submitted S.2000 to the Commerce Committee on Feb. 14, and asked that it be reported, objectors won another hearing, this time before the full committee, on the claim that the hearings before the subcommittee were on S.1944, the so-called "Tugwell Bill," that the Copeland Bill is something else again and that they had a right to be heard. Such a demand cannot readily be ignored, and opponents got their hearing without time limit beginning on Feb. 27.

The Copeland Bill submitted to the committee has been revised since he introduced it on Jan. 4 as S.2000, and again revised and reintroduced under the new number, S.2800, Feb. 19, prior to the hearings before the full committee. In the meantime, President Roosevelt arbitrated differences between Senator Copeland and Assistant Secretary of Agriculture Tugwell and skirmishing on the side lines by various groups continued.

There are now half a dozen bills embodying provisions which sponsors were not able to sell to Senator Copeland. The National Drug Trade Conference picked Rep. Virginia E. Jenckes to introduce H.R.7964, a bill designed, according to the Indiana Congresswoman, "to thoroughly revise the Federal Food and Drugs Act, and strengthen materially its protection to consumers." The Jenckes bill was drafted by the Drug Trade Conference Committee, of which Charles Wesley Dunn is chairman, and was introduced in the House because the committee could not prevail upon Senator Copeland to embody the Dunn proposal in his bill.

Immediate scene of further conflict is, however, the Senate floor, where the trades affected will endeavor to obtain amendments to the bill as reported from the Senate committee. Food and drug legislation will get no consideration by the House Commitee on Interstate Commerce until a bill is received from the Senate. Representative Rayburn's committee is loaded up with administration measures. The food bill is not a major item on the administration's program. President Roosevelt's interest in the measure may expedite its passage, but he will not press for its enactment if it is likely to prolong the session.

The House committee will not act without holding hearings. This means that the performance in the Senate committee probably will be repeated before the bill is reported to the House. It is doubtful whether House leaders will permit a bill of this controversial character to be brought up on the floor unless they can enforce procedure preventing amendments to the bill or unless such amendments are acceptable to the committee.

All this rigmarole should not be construed as indicating that the bill will follow a certain course. Its fate on the Senate floor is still in doubt. But just a little looking ahead reveals that the bill still has a long way to go. It is probable that, while en route, its provisions will be further modified. Senator Copeland's first bill, S.2000, was vastly more acceptable to the food industries than the defunct Tugwell Bill, and the Senator's new bill now removes one of the principal objections to S.2000, which authorized the Secretary of Agriculture to fix for any food, definitions and minimum standards of identity, also standards of quality and fill of container. The trade was apprehensive that this would invite the housewife to ignore trademarks and advertising. The official standards would become the buyers' guide. Senator Copeland met this objection by rewriting Sec. 11 in the singular instead of the plural. Under S.2800 the Secretary of Agriculture's authority is confined to establishing one definition and standard of identity, and one minimum standard of quality and fill of container. Leaving variations and gradations above basic standards to the makers, also leaves plenty of room for them to assert rival claims for preference.

Further Criticism

SEC. 12, dealing with Permit Factories, contains an ambiguity which will permit the Secretary of Agriculture to close down all of the plants of a corporation on account of mishaps occurring in one, irrespective of the fact that the other plants might be operating on wholly different products in which there could be no possible hazard to public health. FOOD INDUSTRIES has been informed by Senator Copeland that this will ultimately be corrected to apply only to offending plants and not to corporations as a whole.

On account of the past experience with illness occurring from eating spoiled canned foods, belief has been expressed by some canners that there is every likelihood that the Food and Drug Administration will, in effect, license every plant in the industry and thereby forever preclude any canner from ever standing up for his own rights in a matter of controversy with the government. It is to be hoped that this feature will be further modified to a point where such despotic power could not be exercised except for the sole purpose of handling a possible emergency affecting public health.

One of the most significant changes reported in the bill is that pertaining

to the committee on food standards. As originally proposed in S.2000, only professors of physiological chemistry could qualify to pass on problems, many of which were not scientific but were purely industrial and technical. It is now proposed that the committee shall consist of seven members, as follows: Two from the food-manufacturing industry, three to represent the public, and two to represent the Food and Drug Administration. All who have learned of this impending change have expressed considerable satisfaction with it, although it has been pointed out that the consumer representatives and the Food and Drug Administration representatives will be able to outvote the industrial members of the committee by 5 to 2. S.2800 provides that the representatives of the public cannot have any financial interest in manufacturing, advertising or sale of food.

Sec. 7(f) Objectionable

Certain objectionable features of the bill are still retained in their original form, notably Sec. 7 (f), which deals with misbranding and label declarations. Many manufacturers of specialties or proprietary foods are opposed to this mandate, which requires labeling to show the ingredients in order of predominance by weight where there is no standard of identity for the food. In the case of assorted foods, there is, of course, the proviso that the Secretary of Agriculture shall grant exemptions, and also a proviso that normal variations in ingredients or their quantities shall be permitted. Unfortunately, Senator Copeland has stated definitely that this section is desired by the administration and cannot be modified. Many manufacturers are already counting the cost of changing their plates for printing labels, and in some cases the cost will represent an enormous figure.

In its practical workings, this section will, of course, impose complications where lard is used as a shortening (wonder if A.A.A. ever thought of this?). And it will require practical disclosure of formulas, a condition that is both unfair and unnecessary, despite the existence of that fraction of the population which possesses idiosyncrasies for certain foods. This group of unfortunates can hardly be protected in this way from lapses of their own personal vigilance.

An important change has been made in Sec. 17 (g), to prohibit the use for one's own advantage on revelation, other than to the Food and Drug Administration or to the courts, of any information acquired under Secs. 12 and 13 concerning any method or process which is entitled to protection in equity as a trade secret, by making this act a felony.

Liability of corporations and their officers and directors as defined in Sec. 18 (b) could well be rephrased so that the law will penalize only willful ordering of sale or shipment of foods in violation of the act. Even then the act would be plenty severe. It hardly seems fair to fine or jail the directors of a company who had nothing to do with the actual violations of the law and might not even be employees of the company.

NEW BEARINGS *Cut $6,000 From* MILLING COSTS

By FRANCIS A. WESTBROOK
Consulting Engineer
Center Conway, N. H.

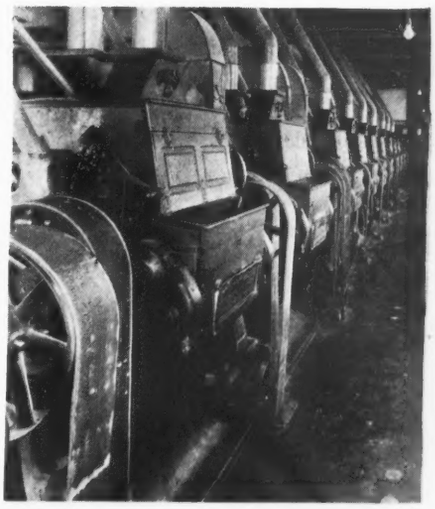
NET SAVINGS amounting to almost $6,000 annually were realized by Acme-Evans Co., Indianapolis, Ind., as the result of replacing with ball bearings the babbitted sleeve bearings of its milling machinery. These savings represent a reduction in power consumed which amounted to some 16 per cent. In addition, it was found possible to use smaller belts, due to the decrease in power, and since ball bearings do not spatter oil, belt life was increased by about 50 per cent. The cleanliness of ball bearings, of course, is important.

The cut in power consumption amounted to as much as 1 kw.-hr. per barrel of flour, which, with the mill running at its capacity of 2,000 bbl. a day, comes to $35. The decrease in power required produced a saving in belting cost because 7-in. belts could be used instead of the 8-in. ones formerly employed.

The company also found that ball bearings consume only about one-third as much oil as do sleeve bearings. Moreover, they need far less attention. And these items are in addition to the above savings.

The application of ball bearings by Acme-Evans includes the installation of 12 bearings in each of 38 double stands of rolls, 48 bearings on reels, 6 on scouring machines and 8 on attrition mills.

As one of the company's mills retained sleeve bearings after the other was equipped with the ball bearings, it has been possible to compare accurately the performance of the two types.



The power required to drive these roll mills and the belting costs incident to their operation were substantially reduced by replacing the sleeve bearings with ball bearings. This battery of mills is in the Acme-Evans Co. plant, Indianapolis.

Code Authority Conference To Be Held March 5-8

Code authorities, trade associations, code committees and others interested in New Deal relations between government and industry will meet in Washington March 5-8, at the invitation of Gen. Hugh S. Johnson, for a general conference on codes of fair competition. The purpose of this gigantic industrial confab is to consider possibilities of improving codes of fair competition and code administration and to discuss further ways and means of accomplishing the purposes of the National Industrial Recovery Act.

To develop constructive criticism and suggestions regarding policies and code administration, General Johnson called public meetings on employment, trade practices and code-authority organizations. Hearings began Feb. 27.

Definitions AND *Standards*

The following definitions and standards for food products have been adopted as a guide for the officials of this department in enforcing the food and drugs act. These definitions and standards include those published in S. R. A., F. D. 2, revision 3, and those adopted May 12, 1933.

HENRY A. WALLACE, *Secretary of Agriculture,*
WASHINGTON, D. C., Aug. 1, 1933

THESE DEFINITIONS are so framed as to exclude substances not mentioned in the definition and in each instance imply that the product is clean and sound.

● Definitions and standards covering Animal Products—Divisions: A. Meat and the Principal Meat Products, and B. Milk and Milk Products were published in the January issue of FOOD INDUSTRIES, pp. 26-28. Those dealing with Vegetable Products—Divisions: A. Grain Products, and B. Fruit and Vegetables, Sec. (a), Fruit and Fruit Products (except wines and vinegars), are found on pp. 78-79 of the February issue. The remaining ones will be published in FOOD INDUSTRIES as quickly as available space will permit.

● Regardless of what happens to the Copeland Bill (S.2800) or other food and drug bills now before Congress, all food manufacturers should be familiar with the existing advisory definitions and standards. They are likely to become mandatory when a new food and drug law is enacted.

● Study them and see if they can be improved and that they cover the foods you manufacture. Make your recommendations to the Food Standards Committee of the Department of Agriculture. Also, be prepared to attend the public hearings that will follow the enactment of a new law and to take a hand in formulating definitions and standards for the foods you do or may want to manufacture.

● Copies of these definitions and standards can be obtained from the Department of Agriculture. Address your request to W. S. Frisbie, Chairman, Food Standards Committee, Food and Drug Administration, U. S. Department of Agriculture, Washington, D. C.—Editor.

II. VEGETABLE PRODUCTS

B. Fruit and Vegetables

b. FRUIT JUICES

1. Fruit juice is the unfermented liquid obtained from the first pressing of sound, ripe, fresh fruit or its pulp, and conforms in name to the fruit from which it is obtained.

2. Grape juice is the unfermented juice of sound, ripe grapes. It is obtained by a single pressing of the fruit, with or without the aid of heat, and with or without the removal of insoluble matter.

3. Orange juice is the unfermented juice obtained from sound, ripe, sweet oranges. It may contain a portion of the pulp and/or of the volatile oil.

c. NUT AND FRUIT KERNEL PRODUCTS

1. Almond paste is the plastic product obtained by cooking blanched and ground sweet almonds with blanched and ground bitter almonds, water, sugar, and/or dextrose. It contains not more than 14 per cent of water nor more than 40 per cent of total sugars expressed as invert sugar.

2. Kernel pastes are the plastic products obtained by cooking with water, sugar, and/or dextrose the blanched and ground kernels of one or more of the following: Apricots, peaches, plums (prunes). They are free from hydrocyanic acid and contain not more than 14 per cent of water nor more than 40 per cent of total sugars expressed as invert sugar. A kernel paste conforms in name to the kind or kinds of kernels employed in its production.

d. TOMATO PRODUCTS

1. Tomato puree[6], tomato pulp, is the product resulting from the concentration of the screened or strained fleshy and liquid portions of ripe tomatoes, except those portions from skin and core trimmings; with or without the addition of salt. The product contains not less than 8.37 per cent of tomato solids.

2. Tomato paste, salsa di pomodoro, "salsa," is the product resulting from the concentration of the screened or strained fleshy and liquid portion of ripe tomatoes, except those portions from skin and core trimmings; with or without the addition of salt, and with or without the addition of basil. The product contains not less than 22 per cent of tomato solids.

3. Heavy tomato paste, "concentrato," is tomato paste containing not less than 33 per cent of tomato solids.

4. Canned tomato juice, "tomato juice," is the unconcentrated, pasteurized product, consisting of the liquid, with a substantial portion of the pulp, expressed from ripe tomatoes with or without the application of heat and with or without the addition of salt.

5. Tomato catchup is the concentrated product made from the pulp and juice of ripe tomatoes (exclusive of skins, seeds, and cores), a vinegar, salt, spice, and other seasoning, sugar and/or dextrose.

e. PICKLES

1. Pickles are immature cucumbers, properly prepared, without taking up any metallic compounds other than salt,

[6] "Tomato puree" should not be confused with "puree from trimmings," a term used to denote a product, commonly unconcentrated, sometimes added in the canning of tomatoes.

..... FOR FOOD *Products**

and preserved in any kind of vinegar, with or without spices; pickled onions, pickled beets, pickled beans, and other pickled vegetables are vegetables prepared as described above, and conform in name to the vegetables used.

2. Salt pickles are immature cucumbers, preserved in a solution of common salt, with or without spices.

3. Sweet pickles are pickled cucumbers or other vegetables sweetened with sugar and/or dextrose.

f. SAUERKRAUT

Sauerkraut is the product, of characteristic acid flavor, obtained by the full fermentation, chiefly lactic, of properly prepared and shredded cabbage in the presence of not less than 2 per cent nor more than 3 per cent of salt. It contains, upon completion of the fermentation, not less than 1.5 per cent of acid, expressed as lactic acid. Sauerkraut which has been rebrined in the process of canning or repacking contains not less than 1 per cent of acid, expressed as lactic acid.

C. Sugars and Related Substances†

a. SUGAR AND SUGAR PRODUCTS

1. Sugar is the product chemically known as sucrose (saccharose), chiefly obtained from sugar cane, sugar beets, sorghum, maple, and palm.

2. Granulated, loaf, cut, milled, and powdered sugars are different forms of sugar, and contain at least 99.5 per cent of sucrose.

3. Maple sugar, maple concrete, is the solid product resulting from the evaporation of maple sap or maple syrup.

4. Massecuite, melada, mush sugar, and concrete are products made by evaporating the purified juice of a sugar-producing plant, or a solution of sugar, to a solid or semi-solid consistence, and in which the sugar chiefly exists in a crystalline state.

5. Molasses is the product left after separating the sugar from massecuite, melada, mush sugar, or concrete, and contains not more than 25 per cent of water and not more than 5 per cent of ash.

6. Refiners syrup is the residual liquid product obtained in the process of refining raw cane sugars, and contains not more than 25 per cent of water and not more than 8 per cent of ash.

7. Cane syrup is syrup made by the evaporation of the juice of the sugar cane or by the solution of sugar cane concrete, and contains not more than 30 per cent of water and not more than 2.5 per cent of ash.

8. Maple syrup is syrup made by the evaporation of maple sap or by the solution of maple concrete, and contains not more than 35 per cent of water, and weighs not less than 11 lb. to the gallon (231 cu. in.).

9. Sugar syrup is the product made by dissolving sugar to the consistence of a syrup and contains not more than 35 per cent of water.

10. Sorghum syrup is the syrup obtained by the clarification and concentration of the juice of the sugar sorghum and contains not more than 30 per cent of water, nor more than 6.25 per cent of ash calculated on a dry basis.

b. DEXTROSE AND RELATED PRODUCTS

1. Dextrose is the product chiefly made by the hydrolysis of starch or a starch-containing substance, following by processes of refining and crystallization.[7]

a. Anhydrous dextrose contains not less than 99.5 per cent of dextrose and not more than 0.5 per cent of moisture.

b. Hydrated dextrose contains not less than 90 per cent of dextrose and not more than 10 per cent of moisture, including water of crystallization.

2. Glucose, mixing glucose, confectioner's glucose, is a thick, syrupy, colorless product made by incompletely hydrolyzing starch, or a starch-containing substance, and decolorizing and evaporating the product. It contains on a basis of 41 deg. Baumé not more than 1 per cent of ash, consisting chiefly of chlorides and sulphates.

c. HONEY

1. Honey is the nectar and saccharine exudations of plants gathered, modified, and stored in the comb by honey bees (*Aphis mellifica* and *A. dorsata*), is levorotatory, and contains not more than 25 per cent of water, not more than 0.25 per cent of ash, and not more than 8 per cent of sucrose.

2. Comb honey is honey contained in the cells of comb.

3. Extracted honey is honey which has been separated from the uncrushed comb by centrifugal force or gravity.

4. Strained honey is honey removed from the crushed comb by straining or other means.

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*Revision 4, Service and Regulatory Announcements, Food and Drug, No. 2, issued August, 1933, by Food and Drug Administration, United States Department of Agriculture.

†According to Sec. 7 of the 1906 food and drug law, confectionery shall be deemed adulterated, "If it contain terra alba, barytes, talc, chrome yellow or other mineral substance or poisonous color or flavor, or other ingredient deleterious or detrimental to health, or any vinous, malt or spiritous liquor or compound or narcotic drug."

On April 24, 1933 the U. S. Food Standards Committee announced that it was considering standards for molasses. The proposed definitions are:

NEW ORLEANS MOLASSES, TABLE MOLASSES, is the product which remains after separating sugar from the clarified and concentrated juice of sugar cane. It contains not more than 25 per cent of water, not more than 6.5 per cent of ash; and not less than 62 per cent of total sugars (sucrose plus reducing sugars[8]).

COOKING MOLASSES is the product which remains after separating sugar from the clarified and concentrated juice of sugar cane. It contains not more than 25 per cent of water and not less than 58 per cent of total sugars (sucrose plus reducing sugars[8]).

[8]Reducing sugars calculated as invert sugar.

[7]When derived from cornstarch, dextrose is known commercially as refined corn sugar.

BAKERS Divided on Code Provisions

(Concluded from page 117)

ment in the industry that might still exist. In the matter of wages, request was made for the elimination of differentials based on geographical location of plants and for the same relative hourly wage rate for each class of workers as existed on July 1, 1929, with 40 cents per hour as the minimum wage for the lowest paid labor.

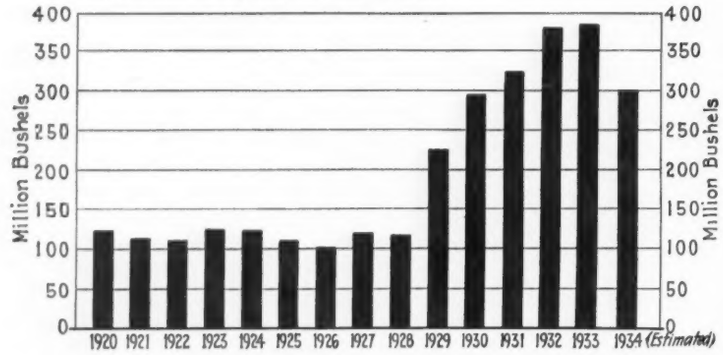
William Green, president, American Federation of Labor, spoke for 45 minutes in support of these proposals. He declared in favor of a 30-hour week but thought it well to give the 35-hour week a trial. The code recommends abolishment of employment of all persons under 16 years of age in any bakery.

Dr. Louise M. Stanley, Chief of the Bureau of Home Economics, U. S. Department of Agriculture, and Dr. Frederick Howe, of the A.A.A. Consumers' Advisory Board, put in pleas for the consumers and suggested the working out and adoption of standards for nomenclature and labeling, including date of baking, weight and quality of bread.

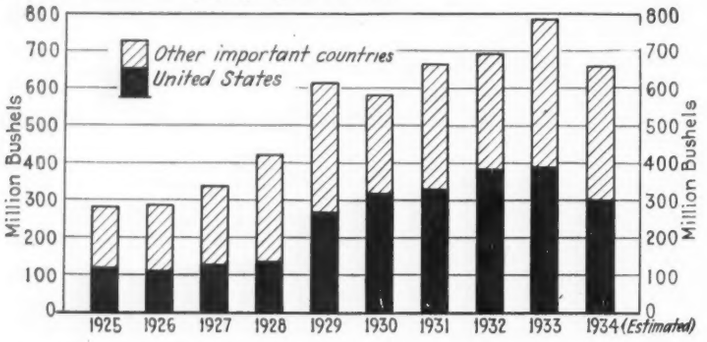
Reports from authoritative sources indicate that the baking code will receive administration approval during the first week in March.

Important Changes Pending In WHEAT SITUATION

U. S. Carry-Over as of July 1, 1920-1934

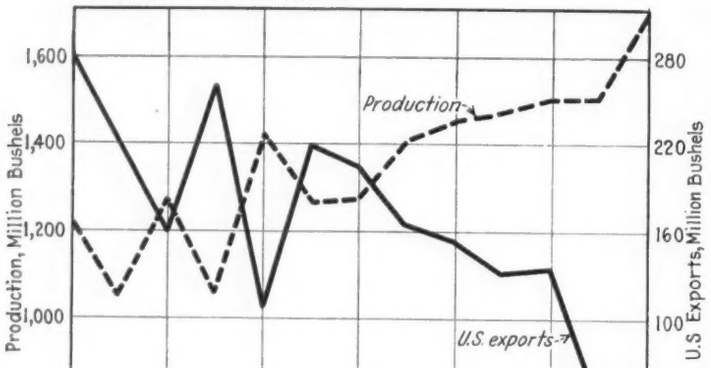


World Stocks as of July 1, 1925-1934

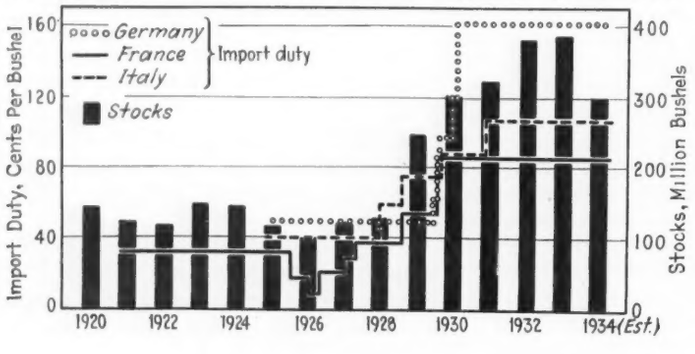


U. S. Exports, and Production in Europe, 1921-1933*

*Including Russian Shipments.



Foreign Import Duties and U. S. Stocks as of July 1, 1920-1934



What Went Wrong in 1929?

Here is the 14-year picture of the carry-over of wheat in the United States as of July 1 of each year. The 1934 figure, of course, is an estimate. The other figures are compilations by the Bureau of Agricultural Economics of the U. S. Department of Agriculture.

Something went seriously wrong in 1929. It is hardly likely that the speculative collapse, occurring long after July 1, caused the wheat stocks in the United States to nearly double their size.

The World Wheat Carry-Over Began to Climb in 1927

Looking at this picture of the successive July 1 wheat carry-over figures in the United States, as well as in other important countries, we see that trouble began to show its head as early as 1927. Foreign stocks began to accumulate.

It took over two years more for United States stocks of wheat to back up. The situation became steadily worse until 1933, but it is estimated at this time that a decided improvement will occur in 1934.

Apparent Causes of Trouble Begin to Appear

That long upward trend of the line showing European production indicates one source of trouble for the United States. European nations, normally large importers of wheat, began to produce their own as a result of the new spirit of economic nationalism. And this, in turn, is the outgrowth of war debts and efforts to balance budgets.

But look what it did to the exports of wheat from the United States.

The Truly Effective Forces Are Foreign Tariffs

To learn the reason for the unexpected accumulation of wheat stocks, trace the cumulative effects of foreign tariffs. Three important countries—France, Germany and Italy—upped their import duties in 1930, thus restricting United States exports.

A very noticeable reduction in the United States stocks of wheat by July 1, 1934, is forecast through the effect of weather and crop restrictions. Prices may react to this change, although it is likely that monetary policies will overshadow their importance.

Charts by Bureau of Agricultural Economics, U. S. Department of Agriculture

NEW BOOKS

HOWS AND WHYS OF COOKING, Second Edition. By Evelyn G. Halliday and Isabel T. Nobel. University of Chicago Press, Chicago, Ill., 1933. 252 + XVIII pp., 5¾x8½; cloth; illustrated. Price, $3.

IN its newest book on cooking, the Department of Home Economics, University of Chicago, has sought to bridge the gap between the housewife and the cooking expert by familiarizing the housewife with the whys and wherefores of her practical cooking methods. In the hands of the young or the previously inexperienced housewife this guide to cooking may accomplish the desired results. At any rate, food companies maintaining kitchens and cooking schools for the benefit of their customers will find in this guide many helpful suggestions which, if followed, will make their recipe books and radio broadcasts more convincing and helpful to their housewife customers.

THE ECONOMICS OF THE RECOVERY PROGRAM. By Seven Harvard Economists. Published by Whittlesey House, McGraw-Hill Book Co., 330 West 42d St., New York, N. Y. 188 + XII pp., 5½x7¾; cloth. Price, $1.50.

AN OLD SAYING in England runs, "A treated cold can be cured in a fortnight; an untreated cold can be cured in fourteen days." Something of this same sort of philosophy regarding recovery from depressions runs through these seven essays on the various aspects of the proposed remedies to improve the current economic situation.

The conservative business man and industrialist will find in this book a great deal to confirm his unvoiced opinions, as well as logic and facts galore with which the authors point out that much of the recovery efforts to date do little more than palliate or prolong the readjustment period that apparently is necessary to end the depression. It was written before the ten billion dollar budget was proposed by the President, but loses none of its effectiveness thereby. Well worth reading.

CHOCOLATE EVALUATION. By Stroud Jordan. Published by Applied Sugar Laboratories, 109 Wall St., New York, N. Y., 1934. 225 + VI pp., 6¼x9¼; cloth; illustrated. Price, $3.

SEVERAL books have been written on chocolate and chocolate products, but until now the user of these products has had very little interpretive information regarding them to guide him. In this third volume of his confectionery series Jordon has succeeded in giving the user and the manufacturer of chocolate a compilation of information that covers chocolate from the selecting of the raw beans to the reconstructing of a chocolate coating based on the data obtainable through chemical analysis. The contents of the book are in readily readable form.

Also he has included a bibliography of books, literature references and patents issued pertaining to chocolate.

FOOD-BORNE INFECTIONS AND INTOXICATIONS. By Fred W. Tanner. Twin City Printing Co., 116 North Neil St., Champaign, Ill., 1933. 439 + VII pp., 6¼x9¼; cloth. Price, $5.50.

WHENEVER gastro-intestinal discomfort occurs, the lay mind immediately associates it with "ptomaine poisoning." In the hands of a shrewd, often unscrupulous, lawyer and an uninformed medical practitioner the cases sometimes result in damage suits against food processors. Numerous cases of botulism twenty to twenty-five years ago give foundation to some of the fears regarding foods. However, it is reassuring to know that in the last seven or eight years no case of botulism has been found to be caused by commercially processed foods. Also that illness or deaths unquestionably traceable to food poisoning and infections are relatively few. Nevertheless, disturbances do occur, even though they may not be due to "ptomaines" or botulism. The paratyphoid or Salmonella group of bacteria appear to be the more common cause for "food poisoning." Dr. Tanner takes the subject of this book seriously and treats it exhaustively, yet in such a way as to be intelligible to the lay reader. It supplements "Microbiology of Foods," written by the same author and published in late 1932.

MODERN FOOD MERCHANDISING. By W. L. Butler. C. V. Hill & Co., Inc., Trenton, N. J., 1934. 174 pp., 6¼x9¼; cloth; illustrated.

BRIMFUL of practical, helpful suggestions for the operation of a food market. While intended primarily for the retailer, wholesalers and manufacturers can make good use of it as the basis of suggestions as to how and by whom their products will be merchandised. Manufacturers closely affiliated with voluntary chain stores should be particularly interested in it.

COMMON SENSE APPLIED TO MOTION AND TIME STUDY. By Allan H. Mogensen. Published by McGraw-Hill Book Co., 330 West 42d St., New York, N. Y. 228 pp., 6¼x9¼; illustrated; cloth. Price, $2.50.

EVEN in the days of codes and labor agreements there are reasons for low production costs, higher quality of products at same or lower cost, and conservation of human energy. No direct reference is made in this book to food-plant operations yet a reading of the various chapters should result in an analytical study of one's factory operations for the lessening of human fatigue, reduction of time and human energy waste, and elimination of other factors that result in unnecessary production cost or lower quality products.

BUSINESS AND PERSONAL FAILURE AND READJUSTMENT IN CHICAGO. By John H. Cover. University of Chicago Press, 1933. 106 + X pp., 6x9; paper; illustrated. Price, $1.

IMPORTANT to business heads because of the factors brought out in the case studies in which the causes of the bankruptcies are discussed. In the cases of personal failures the principals were essentially of the employee classification.

BRITISH OFFICIAL PUBLICATIONS

REPORT OF THE FOOD INVESTIGATION BOARD FOR THE YEAR 1931. By Department of Scientific and Industrial Research. Published by His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C. 2. 293+ X pp., 6x9½; paper; illustrated. Price, $1.17.

CANNED AND DRIED FRUIT SUPPLIES IN 1931. Published as Empire Marketing Board Bulletin No. 55 by His Majesty's Stationery Office. 124 pp., 7¼x9¾; paper. Price, 30 cents.

CONTROL OF WASTAGE IN BANANAS WITH SPECIAL REFERENCE TO TIME AND TEMPERATURE FACTORS. By Claude W. Wardlaw and Laurence P. McGuire, Low-Temperature Station, Imperial College of Tropical Agriculture, Trinidad, B.W.I. Published as Empire Marketing Board Bulletin No. 60 by His Majesty's Stationery Office. 103 pp., 7½x9¾; paper; illustrated. Price, 30 cents.

SUMMARY OF CURRENT LITERATURE; WATER POLLUTION RESEARCH, VOL. VI, No. 1. ABSTRACTS NOS. 1-120. Department of Scientific and Industrial Research. Published by His Majesty's Stationery Office. 36 pp., 6x9½; paper. Price, 60 cents.

These publications are obtainable from the British Library of Information, 270 Madison Ave., New York, N. Y.

QUALITY OILS

Reduce Truck Lubricating Costs

Outline of factors to be considered in making comparisons to determine economy of engine oils

LAST WEEK I happened to be sitting in the office of the automotive superintendent of a large fleet owner in the food field when an oil salesman breezed in. His story in a nutshell was this: "We have a quality of oil at a quality price. If you use it, it will save you money."

The superintendent listened attentively and then asked: "I can get what I consider just as good an oil for slightly more than half the price. Why should I pay you the difference?"

"That's easy," snapped the salesman. "You'll save money in three ways: First, by reduced engine wear expressed in less repair expense. Second, by greater engine efficiency expressed in more miles per gallon of fuel and better power, acceleration and performance. And third, by the use of a smaller quantity of oil expressed in less money spent for oil."

The oil salesman then told of the good reputation of his company and its many years in business; of the dependability of its delivery service; of the uniformity of its products and gave a mass of figures in which gravity, viscosity, flash and fire, cold test, resistance to emulsion, Navy work factor, etc., were prominently mentioned.

I knew that the interview would end in one of two ways: Either the salesman would be ushered out with a request to call again or that the superintendent would take a chance that the salesman's story was true and give him a trial order for two or three barrels of oil at a price higher than he was then paying.

In this particular case, the salesman got his order for several barrels of oil, which the superintendent said he would test in several trucks all working out of one garage. And so the salesman departed, happy, with the order for several barrels in his pocket. As he went through the door, he reiterated: "I'm sure my oil will save you money."

But will he follow through to make certain that the fleet owner saves money in engine repairs, greater engine performance and less oil used? Unfortunately, he does not in the majority of cases. The fleet owner is left to his own resources.

This in contrast to excellent subsequent engineering service supplied by many oil companies when their products are used in industrial plants for stationary steam engines, turbines, pumps, and the like, where service conditions are more or less uniform.

But when it comes to truck operation, the multitude of ever changing variables so complicates the problem that the oil sales engineer generally gives it a wide berth. He trusts that the fleet owner will not have any engine-bearing or other mechanism trouble during the period of the test and that by repeating his claims for the value of quality he will convince the fleet owner of the advisability of using his oil for the balance of the fleet.

Under such conditions the fleet owner must get his own answer. Perhaps this is as it should be, since it is his money that he is spending for oil.

It is the complexity of the solution of the problem which has led FOOD INDUSTRIES to give herewith some of the fundamentals involved, in the

Table I—Comparison of Two Brands of Oil Used by the Same Truck in Succeeding Six-Months' Periods.

	With Oil A	With O i l B
Truck No.	100	100
Period of test	1/2/33 to 6/30/33	7/1/33 to 12/31/33
Miles run	8,500	8,800
Gallons oil used	41	24
Cost of oil used at 35c per gal.	$14.35	at 55c per gal. $13.20
Oil cost per mile run	$0.0017	$0.0015

Table II—Comparative Oil Consumption by a Fleet of Trucks of the Same Make, Type and Capacity Over Two Six-Months' Periods.

Oil Consumption on ABC Truck, 1½-Ton With Canopy Express Body, on Retail Routes

	With Oil A	With Oil B
No. of trucks	40	38
Period of test	1/2/33 to 6/30/33	7/1/33 to 12/31/33
Miles run	270,000	285,000
Refill period in miles	1,000	2,000
Gallons oil used	1,350	814
Cost of oil per gal	$0.35	$0.55
Cost of oil used	$472.50	$447.70
Oil cost per mile run	$0.0018	$0.0016

Table III—Comparison Between Two Different Engine Oils Used by a Truck Fleet of Different Makes and Sizes Over Two One-Year Periods.

	With Oil A Year 1932	With Oil B Year 1933
Oil on hand beginning of year, gal.	525	300
Oil purchased during year, gal.	8,175	4,552
Oil on hand, end of year, gal.	300	150
Net oil used, gal.	8,400	4,702
Number of trucks used	144	128
Mileage run	1,512,000	1,536,000
Cost of oil per gal.	$0.35	$0.55
Cost of oil used	$2,940.00	$2,586.00
Miles run per gal.	180	325
Oil cost per mile run.	$0.0019	$0.0017

hope that a discussion of them will be of value to readers who have to get the answer on automotive oils.

In cases of preliminary tests, the period usually is too short to measure any difference in cylinder wear even if facilities are available for "micing" the cylinders. If a truck runs 60 miles to the quart of oil, this is equivalent to 240 miles to the gallon. At 50 gallons to the barrel, one barrel will suffice for 12,000 miles of truck operation. At 60 miles per day, this will be equivalent to 200 working days, or 8 months of 25 working days each. At the rates taken, ½ bbl. will be sufficient for 4 months of truck operation. Thus, unless the cylinders have been "miced" for wear for the previous period equivalent in miles to that selected for the test of the new oil, it is very difficult to show any lessened wear due to the oil.

It is also probable that differences in fuel consumption and performance attributable to the new oil will be very difficult to measure; especially performance, as it will rest upon the driver's opinion and not upon any simple unit of measurement. This leaves only the use of less oil per mile run as the determining factor as to the advantage of the use of the oil under test.

Assuming the same refilling procedure with both the old and new oil, the only way the new oil can show more miles run, unless less replenishing in operation is required, is to increase the length of the redrain period.

This brings up the question as to how to tell when the condition of the oil in the crankcase is such that it should be removed and replaced by new oil. Shall the rule-of-thumb method of rubbing the oil between the thumb and forefinger be used? Or shall the Magic Eye, described on page 128 of this issue of FOOD INDUSTRIES, be employed? Or some chemical test?

While there is still considerable diversity of opinion on this subject, many oil experts have agreed that when the crankcase oil has reached a viscosity of 100 seconds at 100 deg. F., it has only a small margin of safety above the real danger point. This can be told only by a chemical test, which the average fleet owner is not equipped to make.

Even if such a test were made by the oil supplier, it would apply only to the truck from which the oil was taken. Other tests would need to be made on oil from the other units in the fleet and interpreted in terms of miles run.

Although it would be physically possible to set up a different mileage run between redrains for each vehicle in a fleet, this would be most awkward from an operating standpoint. So some minimum mileage run is adopted, sometimes by truck groups according to size or character of work, after a reduction in the form of a factor of safety.

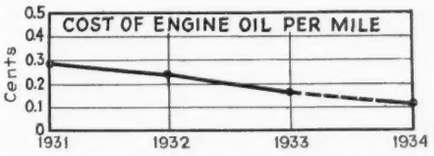


Fig. 1—Cost of engine oil per mile, charted by years for the entire fleet to indicate a reduction in oil expense.

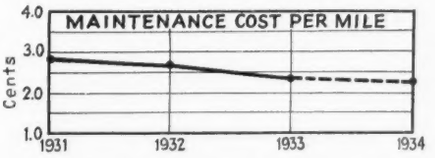


Fig. 2—Chart of maintenance cost per mile to indicate value of quality oil provided; only certain items are included in maintenance expenses.

Thus if a longer redrain period can be set up with the higher-priced oil and justified by a lack of mechanical failures, the economy of the higher-priced oil then becomes a mathematical problem of the ratios of cost to those of mileages run.

In such comparisons it is necessary for the food-fleet operator to have incorporated in his maintenance organization some trustworthy automotive accounting system. This system must contain the following fundamentals: A daily inventory of the oil on hand, a record of the quantity used daily by each unit in the fleet, an accurate record of the daily mileage covered, and, lastly, some method by means of which oil changes can be made in accordance with the drain and refill schedule agreed upon.

Each of the above fundamentals is necessary for some particular reason. Thus a daily inventory is needed to make sure that no oil is stolen or otherwise appropriated for other than truck use. The reason for an accurate record of the quantity of oil used each day in each truck is obvious. The amount used daily plus that on hand at the end of the day should equal the amount indicated on the inventory for the beginning of the day. If oil consumption and cost are to be figured on a mileage basis, it is necessary, of course, to have an accurate record of the miles covered each day by each truck.

If the period between redrains is lengthened, it will be of no avail in reducing oil consumption unless some simple method of controlling these refills is adopted. One such plan was previously described on page 271 of FOOD INDUSTRIES for July, 1933.

With the record-keeping facilities previously outlined, the fleet owner is equipped to make several different forms of comparisons. If the comparison is to be made on one unit of the fleet in succeeding periods and using one brand of oil and then another, a table somewhat like that shown in Table I can be made up.

The results of Comparison No. 1 are limited because they cover only one truck with two different calendar periods. It indicates, however, that Oil B is less expensive in operation, even though its initial cost is higher.

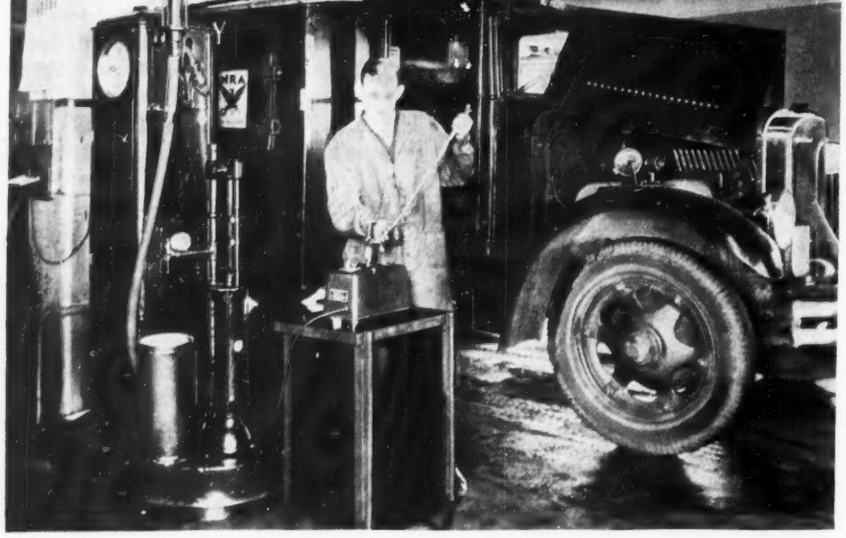
If the test were made on all the vehicles operating out of a certain garage and these happened to be of the same make, type and capacity, a more comprehensive comparison could be made, with the general averages balancing off any unusual conditions of any particular vehicles. Such a comparison is shown in Table II.

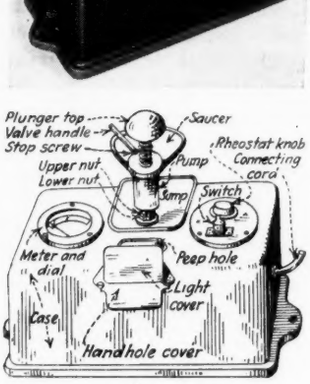
If the test can be made over a period of one year and cover all trucks in the fleet irrespective of size and mileage run, a better general average comparison can be made, as shown in Table III.

With the record-keeping facilities utilized in the compilation of Comparisons Nos. 1, 2 and 3, it also is possible for the fleet owner to set up another type of comparison as a routine means of reducing his oil expense. Such a comparison might be made up in chart form similar to that shown in Fig. 1.

Provided adequate shop records are maintained to give direct labor and direct parts separately from other maintenance expenses, it may be possible to set up a comparative chart as shown in Fig. 2. Such a chart may be used to indicate a reduction in maintenance attributable to the use of better engine and other lubricants, provided there have been no changes in maintenance procedure as to overhauls and no violent fluctuations in the price of labor or repair parts or parts discounts.

The MAGIC EYE . . . .
Now Used to Test Engine Oils





The Magic Eye being used to test the crankcase oil of one of the trucks of the Ice Cream Division of the Borden Co. in New York City. At right, close-up of the instrument, showing details of construction.

THE MAGIC EYE — better known as the photronic cell and heretofore used to count objects passing through its beam of light and to open doors and do other almost human tasks—has now been harnessed to test the lubricating oil used in passenger-car and motor-truck engines.

The magic eye forms the principal part of a new instrument designed to indicate the exact degree of contamination of crankcase motor oil. The condition of the oil is shown on a dial which is marked off in divisions lettered "Good," "Fair" and "Caution."

The test is made by means of light rays passing through a film of the oil and registering on the photronic cell which actuates the needle on the dial. The degree to which the light is absorbed by the minute particles of gritty substances and other contamination determines the movement of the dial needle.

Since contamination in the crankcase oil impairs its lubricating value and is responsible to a great extent for improper lubrication, the use of the instrument offers a scientific means of determining when the crankcase oil should be removed and replaced by new oil.

The instrument was developed by the Light Research Corp., Niles Center, Ill., and is known as the Ellessay Oil Tester. It is distributed by Fink-Dumont-White, Inc., 270 Lafayette St., New York, N. Y.

The apparatus consists of the testing instrument, which is mounted on a portable stand; a container to receive the waste oil; two suction guns for taking oil specimens, together with cylinder holders for the guns and a squirt can for cleaning the instrument pump.

In making the test, the instrument is connected with the lighting circuit. Next a sample of the crankcase oil is taken and placed on the pump-saucer, from which it is fed between two lenses visible through a peep-hole. When the peephole cover is closed to exclude all outside light, the position of the dial needle indicates the condition of the oil.

GENERAL FOODS *Reduces Fleet Costs*

BASED on the actual figures for the first nine months of 1933, the average cost per car-mile for the fleet of 1,007 vehicles owned by the General Foods Corp., during the year 1933 will be 4.3c., a reduction of 0.6c. as compared with similar costs in 1932. The costs include all operating and maintenance expenses and the fixed charges of license, insurance and depreciation.

The General Foods fleet includes 323 coupes, 467 sedan deliveries and 217 panel delivery units of ½-ton capacity, nearly all of which are 6-cylinder chasses. The fleet operates in all parts of the country.

The actual figures for the first nine months of 1933 show a total fleet mileage of 11,313,086 and a car-mile operating cost of 4.33c. This compares with 11,644,326 miles and an operating cost of 5c. per car-mile for the corresponding period of 1932. The reduced costs are attributed to many causes, of which an improved maintenance system and facilities, improved roads and better

vehicles, gasoline, tires, and oil are important items.

The General Foods fleet covered a total of 15,735,754 miles in 1932 and from present indications the corresponding mileage for the year 1933 will be 15,335,000. This is an anticipated reduction of 400,000 miles in total fleet mileage and has been accomplished by better routing and reassignment of salesmen's territories.

The outstanding result in the anticipated reduction in the car-mile cost for 1933 as compared with 1932 from 4.9 to 4.3c. is that it has been accomplished with an estimated fleet mileage reduction of 400,000. Usually car-mile costs increase with reduced fleet mileage, because the unit car-mile cost is obtained by dividing the total expenses by the total mileage run.

Tire costs provide an excellent example of how total car-mile costs have been reduced. In 1927 tire costs averaged 0.8c. per mile, including both new tires and repairs on old equipment. In 1929, due to better tire maintenance and care and aided by an improvement in the tires themselves and a reduction in their price, tire costs were reduced to 0.4c. per mile or to just half what they had been two years before. In 1931 the tire costs dropped still lower to 0.3c. per mile.

For the first nine months of 1933, the tire-mile cost was considerably under 0.2c. However, for the entire year 1933 it is expected that the cost will average approximately 0.2c. per mile.

Autocar Offers New Sleeper Cab

THOSE operators in the food field whose trucks work on such long runs that two drivers must be employed, one driving while the other is resting, will be interested in the new Autocar de luxe sleeper cab illustrated herewith.

The new cab differs from others for the same purpose in that it provides for the spare driver a comfortable couch of full length in a place where there is good ventilation and in a position parallel to the motion of the truck rather than at right angles to it. The new construction provides a comfortable sleeping position in the same compartment with the driver in place of the shelf or cubbyhole crosswise of the truck in back of and above the driver's seat, as generally furnished in other cabs and into which a man could conceivably crawl with minimum comfort.

The sleeping berth in the Autocar cab does not interfere with the driving seat. The berth is made up of two parts, the seat section and the foot and leg rest which folds under the cowl when not in use. The back of the seat section can be adjusted to any desired angle very much like the old-fashioned Morris chair.

The cab is 77¼ in. from front to back and this is only 22 in. longer than the standard Autocar de luxe cab. The sleeper berth has a length of 73 in. when fully extended.

The good-looking man impersonating the spare driver shows the sleeping and reclining positions of the latter in the new sleeper cab brought out by the Autocar Co., Ardmore, Pa. At top, right, the cab as it appears from the outside.

ABSTRACTS OF
Current Literature

WHITE WINES. J. Ribereau-Gayon. *Comptes rendus de l'Académie des Sciences,* Vol. 196, pp. 1689-1691; May 29, 1933.

Ordinary filtration clarifies white wine but does not remove all of the offending iron phosphate or copper sulphide; ultra-filtration gives both clarity and a nearly perfect removal of the precipitate. Clear white wines can be had without any filtration; not by preventing the insoluble phosphate or sulphide from forming but by keeping them in colloidal solution when they do form. It is of considerable theoretical interest to the colloid chemist, but of even greater practical interest to the producer and consumer, that a very small addition of an edible vegetable gum is sufficient to keep the wine perfectly clear, even though it contain enough iron phosphate or copper sulphide to cloud the wine badly in the absence of the vegetable gum. Either gum arabic or gum tragacanth is effective, in amounts of about 1 part in 5,000 for the usual quantities of iron phosphate; as little as 1 part in 20,000 is often sufficient for copper sulphide clouding.

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BUTTER SPOILAGE. L. M. Horowitz-Vlasova, M. I. Lifschitz, E. E. Kachanova, I. A. Oberhard and A. V. Shalberova. *Papers of the Central Biochemical Research Institute for the Food Industries,* U.S.S.R. (Moscow), Vol. 2, pp. 315-338; No. 8 (16), 1932.

Precautions to prevent spoilage of butter must include the three major causes: bacteria, molds (fungi), and exposure to atmospheric conditions (light, moisture and oxidation). Protection from exposure is easily accomplished in clean, well-sealed drums or tubs lined with good parchment paper; and this, coupled with low temperature —about 25 deg F.—is also the best protection against attack by mold spores. To prevent bacterial attack, full advantage should be taken of the fact that pure butter fat as such does not encourage bacterial growth; hence the fat phase should be made as nearly continuous as possible by eliminating air bubbles, residual buttermilk, and water drops of any considerable size. The Danish practice of salting butter, whatever its other merits, is not helpful against bacteria, because the solubility of salt in butter is too low; but salting the cream (about 2 per cent) before churning concentrates salt in the water phase sufficiently to destroy many organisms. Acidifying the cream also destroys bacteria, but, as it favors mold growth, the wisdom of this expedient is doubtful. As in many other lines of food production, the best expedient of all is *scrupulous* cleanliness in every production step. Keeping germs and mold spores out is more effective than trying to destroy them once they are in.

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HEAT-RESISTING SPORE FORMERS IN MILK. G. Heuser and E. Krapohl. *Zeitschrift für Untersuchung der Lebensmittel,* Vol. 65, pp. 429-435; April, 1933.

Summer temperatures, with the increase in rate of bacteria growth, lead to the use of a higher pasteurization temperature for a longer time to destroy the pathogenic bacteria. This practically eliminates lactic-acid bacteria, but it has been shown that spores of certain anaerobic butyric-acid bacilli are not affected. The milk is then liable to undergo rancid or putrid spoilage instead of the normal lactic-acid souring, as the butyric bacilli have a clear field in such milk. The method to combat such a condition lies in centralized dairies, where the milk can be cooled rapidly and kept cool until delivery to consumers.

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SOY BEAN OIL. R. L. Smith and H. R. Kraybill. *Industrial and Engineering Chemistry,* Vol. 25, pp. 334-336: March, 1933.

A non-break soy bean oil shows little or no precipitate and bleaches to a colorless or a very pale yellowish colored oil when heated to a temperature of 600 deg. F. The soy bean oil produced by the expeller or hydraulic press, when heated to 600 deg. F., develops a dark color and a dark-colored precipitate and is a break oil. Moisture content of beans and temperature of pressing have important effects upon the quality and yield of the oil. With beans of 4 per cent moisture content there is a gradual increase in color before the break test, with increase in temperature of pressing. The critical temperatures of pressing, at which break oils result, are raised higher as the moisture content of the beans is reduced.

LACTOSE FROM MILK. Jiro Kato. *Journal of the Society of Chemical Industry, Japan,* Vol. 36, pp. 158-159B; April, 1933.

Chemically pure crystalline milk sugar (lactose) can be made directly from milk by a method of electrodialysis which yields an almost ashless casein at the same time. A 3-cell dialyzer with a carbon anode in one outer cell and a brass cathode in the other is used. The anode membrane is made of silk and the cathode membrane of sail cloth. Both are coated with chrome gelatin and cupric ferrocyanide. These membranes prevent loss of lactose by escape into the outer cells, and permit acidity control in the center cell. A direct current of 100 volts and 1 amp. is used. As the dissolved salts are eliminated the hydrogen ion concentration gradually increases until casein begins to precipitate. When coagulation is complete the casein is removed by filtration and the filtrate is evaporated in a vacuum evaporator until crystallization occurs. The crystals are dried in a centrifuge.

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PROCESSING WHEAT AND FLOUR. Carlos M. Albizzati. *Anales de la Sociedad Cientifica Argentina,* Vol. 116, pp. 5-18; July, 1933.

Although it is recognized that low-grade wheats can be improved by thermal treatments or by chemical processing to impart better bread-making qualities, it is urged that such processing is both unnecessary and undesirable. With particular reference to the treatment of high-gluten wheats with potassium bromate to improve baking quality, it is pointed out that even better results can be obtained simply by judicious blending of the high-gluten wheats with other wheats to compensate deficiencies in bread-making quality. As specific examples, some Argentine wheats (Lin Calel, San Martin, Triunfo, 38M. A. and Excelsior) are cited as being suitable high-grade wheats for blending with less satisfactory bread-making wheats.

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CITRUS FRUIT PRODUCTS. Nicola Parravano. *Giornale di chimica industriale ed applicata,* Vol. 15, pp. 213-219; May, 1933.

Byproduct citric acid can compete successfully with the fermentation acid, provided the most efficient production methods are used. But there must be thorough understanding and cooperation among growers, acid producers and marketing agencies. There is a similar situation with respect to lemon essence and the like essences produced by the industry; competition with the newer artificial products is keen. Sicilian chemists, with the aid of the

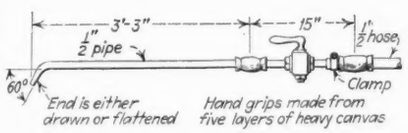
(Turn to page 146)

IDEAS . . . FROM PRACTICAL MEN

Steam Clean Greasy Machines

The vegetable and animal oils used in foodstuffs have an unpleasant way of getting all over a processing machine, and then they oxidize (turn rancid) and eventually contaminate the food being handled. Even the mineral oils seem to possess a mania for spreading all over; and their odor and taste are none too appetizing in a food product.

Oils and greases cannot satisfactorily be removed with a rag. They will respond to emulsifying agents and water, but this makes an unpleasant slop around the machine, especially in bakeries where floors often are not constructed for drainage. And the inner parts seldom can be reached at all.



However, live steam applied under high pressure will do the trick. With a rubber hose and a nozzle such as is shown in the sketch, every part of the average machine may be reached. The dirt will be blown out, the surfaces will be left dry, and very little water will get onto the floors. The method is in common use in canning plants.

HARRY STINER, *New York, N. Y.*

Pallets Reduce Rehandling

Cartons can be loaded for delivery and unloaded again with a minimum of rehandling by a method employed by Illinois Pacific Coast Glass Co., San Francisco. In loading trucks with glass bottles in corrugated cases for delivery to Best Foods, of the same city, the glass company stacks several cases on a light-weight wood pallet, or false floor, supported by a skid which, in turn, is in place on a trailer that will transport the load to the shipping platform. A high-lift truck having a fork that will slip into the open spaces of the pallet, or that will lift a skid, takes each stacked load as a unit and transfers it to the motor truck.

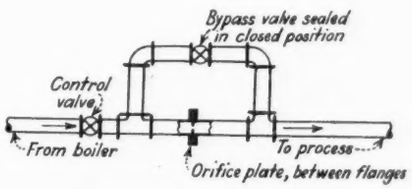
With the pallets, the loads may be double-decked, a second loaded pallet being placed on top of a stack already

on the skid, this being done by the high-lift truck.

In unloading the shipment, the loaded skids are removed by hand trucks. When the cases are unstacked, the skids and pallets are set aside to be returned as "empties."

Avoids Steam Demand Peaks

Excessive drops in steam pressure and the consequent necessity for forcing the boilers when cold processing equipment is being warmed up can be avoided by preventing the valves from being opened wide. Orifice plates in the steam lines between the control valves and the equipment will do the trick. The size of the orifice is governed by steam pressure and processing time,



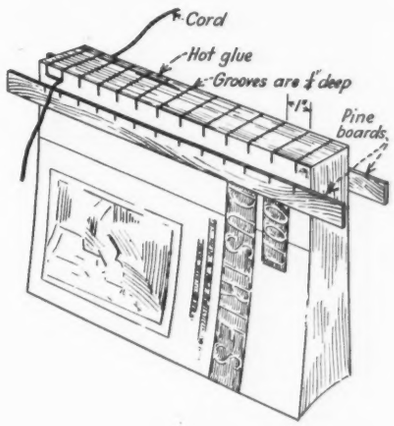
and it can be determined by calculation or by trial.

As shown in the sketch, a bypass around the orifice is provided to allow for emergency conditions. The valve in this bypass line should be sealed in its closed position with a breakable seal and the operators held responsible for the necessity of its operation.

S. H. COLEMAN, *Waynesboro, Va.*

How to Bind Your Magazines

To file the twelve numbers of FOOD INDUSTRIES received during the year requires quite a little drawer space and, besides, employees are likely to take some of the loose issues and fail to return them. We save space and preserve all the copies in a convenient and permanent form by binding them into volumes by hand.



We first remove from the issues all pages not desired for reference. Then we clamp the remainder, with the index at the back, between two soft pine boards, with the back edges even with the top edges of the boards. Grooves are then sawed into the paper, and the board, to a depth of ¼ in. at intervals of about one inch. Next the volume is raised until the edge is about one inch above the boards, and hot glue is applied, care being taken to coat the bottoms of the grooves. Now take a heavy cord, place the middle of it in the first groove, bring both ends along the sides of the volume and cross them in the next groove. Continue until all grooves are "laced." Apply another coat of hot glue and place a strip of cloth over the edge, extending it about an inch along the sides. Apply a light coat of glue and put a cover on the volume; we use a file folder for this purpose. Place under a weight or in a press to dry.

This volume will last indefinitely.

L. E. EARLENBAUGH, *Chester, Ill.*

UNDER YOUR NOSE

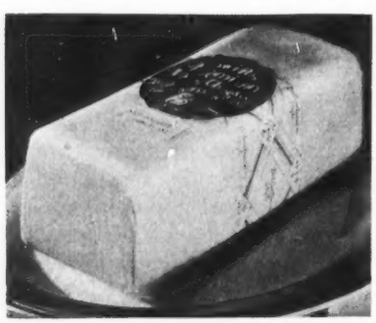
Contributions to this practical ideas department will be paid for at a rate of $3 or more per item if suitable for publication. A likely way to get material for such items is to consider the whys and wherefores of apparatus and methods used in your daily plant routine.—THE EDITORS.

NEW PRODUCTS—

—NEW METHODS

The package sells the product when its appeal is as strong as that of the folding carton used for Hormel soups. Besides three cans, the carton contains a "movie film" showing stills of actual stars in stirring drama. The children quickly convert the package into a miniature theater. Additional films are given for labels.

Weet Treets, alias cheese-flavored, whole-wheat crackers, have been introduced by J. B. Carr Biscuit Co., Wilkes-Barre, Pa. Lightly salted, thin and crisp, they serve as a beverage cracker. A companion product, Beer Pals, comprises a miniature whole-wheat cracker containing a rare cheese and malt extract.



Sandwich loaves prepared by the improved "delicatessen process" are a new Swift & Co. line. There are five items, all wrapped in transparent cellulose and all but one, meat loaf, in cut-back fat.

Whole-Wheat Wafers have sales appeal in this "sunburst" carton with its transparent cellulose wrapping. Made by Robert A. Johnston Co., Milwaukee, the wafers contain honey, whole milk and open-kettle molasses.

Prune Bread Boosts Sales For Number of Bakers

Many bakers recently have added prunes to their dough to give their customers a new bread. Introduced for the first time on May 4, prune bread now has a recorded production of 200,000 loaves a week.

There are said to be no serious production problems involved in making prune bread. Packers are now producing pitted prunes, and it is only necessary to soak these for three or four hours and throw them into the mix. A high-speed mixer will chew them up without previous cutting or grinding. In addition to pitted prunes, there are several specialty manufacturers supplying prune pulp in cans, which merely calls for a slight revision in the bread formula. Bakers are using both straight and sponge dough bread.

An advantage to the baker is that he can use, if he chooses, a less expensive flour, because the addition of the prunes discolors the loaf and a blue flour is just as good as a pure white flour.

Prune bread does not cut into the sales of other bread, but increases the baker's total sales. At any rate, this has been the tendency with some 65 California bakers contacted by L. B. Williams, director, California Dried Fruit Research Institute.

Makes Boiled Ham in 6 Days

It requires less than six days to produce boiled ham with a new process used by F. G. Vogt & Sons, Inc., Philadelphia, for its Onlee Ham. For old-style boiled ham, 48 to 72 days was required for curing alone.

With the new method, the bone is removed from the fresh ham and the tender parts cut into pieces. These are cured, in the usual manner, in about three days. The shank is cut very fine and used as a binder to mix with the cured pieces. Then this mixture is pressed into a Visking casing, a square mold being used to prevent the casing from expanding too far. A stockinet inserted into the mold facilitates handling in subsequent operations. After smoking and cooking in the usual manner, the product is chilled to 32 or 34 deg. F.

Elimination of the extended curing time does away with the necessity for large cold-storage facilities during the curing period. Another advantage is that not more than ½ lb. is lost in slicing the Onlee Ham, compared with 1½ to 3 lb. lost on waste ends with ordinary hams, the company states.

The Vogt company uses the new process under a license from Modern Food Process Co., Philadelphia.

Cans Whole Baked Sockeye

Whole sockeye salmon have been baked and canned by Western Fisheries Co., Anacortes, Wash. Intended for high-class trade, the baked salmon are cleaned and skinned and put up with a special sauce containing olives and various "trimmings." Made to the shape of the fish, the cans recently put on the market are 24 in. long. They are shaped and soldered by hand.

Vitaminize Evaporated Milk

To make their product of higher nutritional value, two Western evaporated-milk manufacturers have added vitamin D to it. The Page Milk Co., Merrill, Wis., announces a fortified evaporated milk which contains 1,500 ADMA units of vitamin D in each 14½-oz. can, which is the equivalent of approximately three teaspoonfuls of ordinary cod-liver oil. The vitamin is obtained from a cod-liver-oil concentrate developed by Health Products Corp. It is said to be stable and not affected by temperature changes.

Dean Milk Co., Chicago, is now marketing an evaporated milk which contains 150 Steenbock units of vitamin D in a 14½-oz. can, the equivalent of 2½ teaspoonfuls of high-grade cod-liver oil. This company adds a cod-liver oil concentrate developed at Columbia University and manufactured by National Oil Products Co.

Champagne-on-Ice Candy

Candy packed in such a way that it simulates a bottle of champagne in a bucket of ice is an innovation by Johnston's, Milwaukee. About a pound and a half of chocolates and taffy is contained in a shiny copper pail, the taffy being on top and arranged to represent ice. Embedded in the center and at just the right angle is an imitation Clicquot champagne bottle containing hard candy pellets of the color of the beverage.

That this package would be a nightmare to the production man is obvious. To put the bottle in the center means that the candy has to be very carefully arranged to prevent displacement and

to support the bottle. Then a special shipping container is necessary to keep the bottle from changing position. Despite complexities, the package is successfully handled, Johnston's say. And with all its elaborateness, the Champagne Bucket retails at $3.

Freshness of Fish Indicated By Voltage Measurements

By measuring the voltage of a fish, its relative freshness may be determined. Around this discovery, Maurice E. Stansby and James M. Lemon, scientists at the Gloucester (Mass.) station of the Bureau of Fisheries, have worked out a method for finding out how long non-fatty fish, such as haddock, may be expected to keep.

The test is conducted in two steps; the first is to neutralize the basic decomposition products in the flesh with acid; the more acid required for immediate neutralization the greater the decomposition. The second step is to determine the amount of protein breakdown present. This is done by adding more acid after neutralization of basic decomposition products and observing the ability of the flesh to combine with it. Flesh from a fresh fish combines with more acid than that from one in which considerable protein breakdown has occurred.

To determine the acidity of the fish, the flesh is chopped and mixed with water. Quinhydrone is then added and a platinum electrode is dipped into the mixture. The electromotive force produced by this half cell, as measured against a reference electrode, is proportional to the acidity.

A self-contained, portable apparatus has been constructed for making this test.

Zeolites "Soften" Milk

"Softened" cow's milk, which may be used as a substitute for the mother's milk in feeding babies, can now be produced. Research at Ohio State University has disclosed that the zeolite process long used in softening water is effective also in treating milk.

When the cow's milk is filtered through the zeolites, about 20 per cent of the calcium content is removed. To obtain this percentage of calcium removal, however, the milk must be acidified to about 0.3 per cent before being treated; with an acidity of 0.16 per cent only from 3 to 5 per cent of the calcium is taken out.

This treatment also lowers the phosphorus content of the milk, and if the zeolite has been treated with sodium hydroxide, the calcium-phosphorus ratio remains about the same as in the untreated milk. Sodium and potassium are kept in nearly any desired ratio by selecting the proper mixture of alkali metal chlorides for reviving the zeolite.

It is the calcium in cow's milk that is responsible for the formation of large digestive curds which give young babies colic and other ailments. With 20 per cent of the calcium removed, this objectionable feature is overcome, tests showing that the milk is not coagulated by rennin.

The research in connection with this development was carried out by J. F. Lyman, E. H. Browne and H. E. Otting, of Ohio State University, and the M & R Dietetic Laboratories, Inc., Columbus, Ohio. Zeolite treated "Sofkurd" milk is being marketed by Moores & Ross Co., Columbus.

Extends Life of Shortenings

The keeping qualities of all edible oils or fats can be considerably improved. This is the claim of General Vegetable Oil Co., New York, for a process developed for treating shortenings. A report from the Bureau of Animal Industries indicates that it extended the non-rancid life of bleached lard about 5 to 7 times and that of unbleached lard about 2½ times.

The process is said to retain the natural anti-oxidents or anti-enzymes which give the products their keeping qualities. Also, the natural flavors and aromas of the oils are preserved.

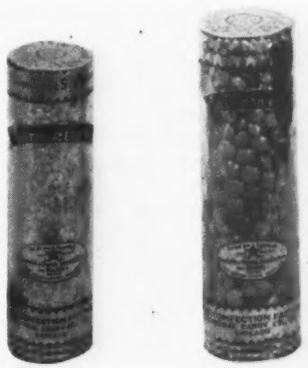
The Vegetable Oil Co. has placed on the market a shortening made by the new process. It is called Snosweet.

Cereal; Self-Rising Flour

Another whole-wheat product, a quick-cooking breakfast cereal, has been announced. Known as Dex, the cereal is manufactured by Elam Mills, Inc., Chicago. It is produced by toasting the berries of the grain to a rich nut-brown color and then grinding them between stones to the consistency of meal. During the toasting, the starches are largely converted into dextrin, resulting in a product easily digested and rich in flavor. Dex cooks in five or six minutes.

Elam Mills also has introduced a self-rising buckwheat flour, produced by the buhrstone method of grinding. Manufacturers of whole grain products, the company believes the process alters neither the food value nor flavor of the buckwheat.

Tipsy extract bottles are fast going out. The trend is toward a tapering container with a broad base. Screw caps also are in vogue. A well-known commercial artist introduced the modernistic motif into the design of this bottle for Wesco Foods Co., Cincinnati.



Trim - ettes, decorative confections made by Pan Confection Factory, National Candy Co., Chicago, are packaged in a double-walled transparent cellulose container that effectively displays their decorative quality. Moreover, by cutting a circular piece out of the top, the consumer converts it into a handy sifter.

A decanter has been adopted by Waples-Platter Co., Fort Worth, Texas, for its vinegar. The label is small and the cork designed for table use. Owens-Illinois developed it.

What Food Men Are Doing

NRA Speeds Up Action on Food Codes; Four Approved; Hearings on Many

After about two months under N.R.A., food codes at last are getting action. Within the last 30 days, codes of fair competition for the macaroni, coffee, fishing and chewing-gum industries have been approved. Many others not yet approved have been taken up in public hearings and are about ready for Gen. Hugh S. Johnson's final action. Still others have been placed on the calendar for hearings.

The important canners' and bakers' codes were cleared in hearings. Codes of fair competition for pretzels and wine have gone through the mill, as have supplementary codes for oysters, California sardines and the wholesale lobster trade. On Feb. 26, codes for the canned salmon, blue crab, and preserve and glacé fruit industries came up. The code for the carbonated-beverage industry will be heard on March 8, that for the imported green olive industry on March 9, and scheduled for the week of March 12 are sessions on the chocolate, cocoa, confectionery and wine industries codes.

The new division administrator of food codes at N.R.A., A. W. Riley, who has been in charge since Feb. 5, was brought over from the Department of Justice, where he was handling enforcement of the labor act as it dealt specifically with food industries. His three able deputies—George Carlson, of the fisheries group; C. W. Dunning, who was brought over from A.A.A. for his wide experience in the marketing phases there; and Walter White, who had been at N.R.A. and was thoroughly in touch with N.R.A. procedure and problems—have been organizing the groups under their control, and the whole machinery is speeding up.

Delays complained of have been chiefly due to the hallyhoo (for which N.R.A. was only indirectly responsible) that N.R.A. would do what A.A.A. had been unable to do. The complete change of approach from the A.A.A. philosophy of looking out only for the producer to the N.R.A. preoccupation with the industrial problem necessitated review of virtually all the accumulated data and preparation for the job which is now well under way. N.R.A.'s experience with code making, now extensive and varied, led also to the realization that great haste, even with relatively minor codes, leads to more grief than speed. Excellent liaison has been established with A.A.A., and increasingly rapid clearance of food codes is indicated.

GLEN G. HOSKINS

The president of National Macaroni Manufacturers' Association has been appointed code executive for the macaroni industry. He was chosen by the newly elected Macaroni Code Authority. Mr. Hoskins resigned his position with Foulds Milling Co.

Uphold Coconut Oil Tax

By a "nay" vote of 14 to 11, the House Ways and Means Committee defeated a move for reconsideration of the 5-cent tax on coconut and sesame oils, and it looks as if it may go through with the 1934 tax bill. The tax is an excise levy placed upon the first processor of the oil when it is to be used in oleomargarine, soap or other manufactured products.

Enforcement of this tax would mean ultimate destruction of the copra-crushing industry in the United States and the Philippines, in the opinion of J. D. Craig, of Spencer-Kellogg & Sons, Inc., Buffalo.

A.A.A. Codes Follow NRA Style

N.R.A. standards for the food industries codes were virtually guaranteed by the provisions of the executive order transferring the major portion of these codes from A.A.A. to N.R.A. Under Sec. II of the exceptions to the order it is provided that food codes which remain at A.A.A. are to be phrased in the form of N.R.A. codes where that phrasing does not affect the farmer directly or infringe on his interests. In other words, the provisions in the old A.A.A. codes allowing the Secretary of Agriculture to have full and free access to company books at all times and the provision that all future amendments to the food and drug laws were accepted under the codes will both probably be eliminated from even the A.A.A. codes. These were the most specific of the complaints which the food industries had against the A.A.A. codes. The new ruling is interpreted unofficially as virtually allowing N.R.A. to veto provisions in A.A.A. codes which do not affect the farmer or his potential income but which do affect the food industries.

Milk Tax Bill Passes House; A.A.A. Tests New Policy

The bill making beef and dairy cattle a basic commodity under the Agricultural Adjustment Act, authorizing a processing tax of not more than 5c a pound on butter content of milk to pay for the slaughter of beef and dairy cattle and setting aside $200,000,000 as a revolving fund to begin the job and pay for the animals killed, pending the collection of the tax, has passed the House and is pending before the Senate.

Meanwhile, A.A.A. is in no hurry to plan its tax process. The revolving fund will give a breathing space and the trial of the many new-type milk-marketing agreements now in effect will be awaited before final decision is made on the amount or the method of collecting the processing tax. Public approval must be obtained, it is felt at A.A.A., for the new licensing plan, and following that the tax plan will be decided upon. It has become overwhelmingly evident that during the depression period, a rise in the price of milk, even though the increase be tiny, is reflected immediately in reduced consumption, so closely budgeted is the diminished income of the city dweller, and milk sales suffer immediately when prices go up. A.A.A. hopes to cut the cost of milk to the consumer by its new plan, and if this is done, the tax can be put on. But

there is no delusion at A.A.A. that the farmer and the distributor will find some way to let the consumer pay. However, a way may be found to avoid raising milk prices, even with the tax in effect. The working of the milk licensing plan will have to show the way, however.

To Revise Copeland Bill; "Dunn" Measure Pushed

Many new angles have developed in the fiight of the administration to put over its far-reaching food and drug legislation program. As a result of criticism in the House, the revised Copeland bill (see page 120) will be modified sharply to take out some more of the "bugs." Meanwhile, the so-called Dunn bill, introduced in the House by Representative Jenckes and in the Senate by Senator McCarran, has come strongly to the fore.

Associated Grocery Manufacturers of America has been very active in backing the Dunn bill, maintaining that it contains all the important features of the Copeland bill for consumer protection and at the same time deals more justly with the manufacturer. National Wholesale Drug Manufacturers' Association and other drug interests support the Dunn measure.

In modifying the Copeland bill, it is reported that Senator Copeland will clarify the definition of "food," provide for the natural shakedown of packaged foods in transit, clip the autocratic powers of the Secretary of Agriculture and tone down the regulation of advertising. However, the parliamentary situation is expected to prevent enactment of a food and drug bill this session.

Voluntary Control Preferred

Compulsory crop control is not likely to be extended beyond cotton at present, although bright tobacco may come under the plan next. Circumstances will determine that. The point is that A.A.A. feels that the voluntary control, with benefit payments from processing taxes, will work successfully in the crops whose chief market is domestic, but will not work so well when a large proportion is sold abroad and cannot pay the processing tax. Milk, big problem though it is, is not likely to be "next" in line for compulsory control.

A.A.A. Acts Upon Marketing Agreements For Meat, Milk and Canning Crops

Setting a pace not far behind that of the N.R.A. in its recent food code activity, Secretary Wallace and his Agricultural Administration made considerable headway in the last month in handling marketing agreements between food manufacturers and the farmer. The much discussed agreement for the meat industry at last has taken definite form (see page 117), and many of the new model milk-marketing agreements have gone into effect in the larger milksheds. A control board has been set up for the pact between the peanut millers and the growers, which went into effect Jan. 27, and the novel agreement for the California asparagus-canning industry has been tentatively approved. In addition to all this, the A.A.A. has held hearings on three of the proposed marketing agreements for the canning industry—those covering corn, peas and red sour cherries.

Embodied in the asparagus pact is a new method for increasing returns to growers. It differs from others proposed for canned products in that no minimum prices are established. And while the total pack for the 1934 season is to be limited, no allocation of the pack is made to the various contracting growers. The idea is that by allowing canners to compete during the limited canning season in purchasing their packing reguirements, with control of the combined total pack, the prices to growers would be substantially increased. The packing of asparagus cannot begin until April 1, and all operations must cease upon a date to be determined by a control committee.

The proposed agreement for the corn-canning industry seeks to establish minimum prices to the growers, by districts. The agreement provides for a national commodity committee and twelve regional commodity committees to supervise the agreement, set prices and determine allocations.

The allocation areas and their percentages of the total pack would be:

New England, 10.17; New York, 4.6; Maryland-Delaware, 11.33; Pennsylvania, 1.1; Ohio, 7.4; Indiana, 8.75; Illinois, 18.63; Tennessee, 0.66; Minnesota, 16.64; Wisconsin, 3.44; Iowa-Nebraska, 15.49; Michigan, 0.78; and all others, 0.94. Canners not in these areas would be considered as belonging to the closest area.

However, the 1934 pack will not be limited or allocated.

The proposed corn agreement further provides that all corn canned in excess of allotments would be impounded until Aug. 15, 1935.

Minimum prices to growers in the 1934 and 1935 seasons and allocation of pack by regions also are provisions of the proposed marketing pact for the canned-pea industry. This pact provides a minimum price not less than 15 per cent above the average 1933 price. A national commodity committee will have charge of allocating the pack. Regional committees will make allocations to individual canneries.

The percentage allocation is:

Wisconsin, 44.84; New York, 11.78; Michigan, 2.88; Indiana, 2.15; Maryland, 6.27; Delaware-New Jersey, 1.30; Ohio, 1.54; Utah, 5.96; Colorado, 1.73; California, 0.66; Illinois, 5.96; Minnesota, 6.29; Montana, 1.95; Idaho, 0.31; Wyoming, 0.17; Washington, 1.37; Oregon, 0.65; Pennsylvania, 1.08; Virginia, 1.29; Maine, 0.66; Tennessee, 0.44; Oklahoma, 0.04; Kansas, 0.23; Nebraska, 0.02; Iowa, 0.43.

If the pea crop contracted for is larger than total allocation, the excess may be impounded until the next year.

Minimum prices for sales by canners and a price-fixing committee composed of representatives from each of the canners are provided for in the proposed marketing agreement for the red-sour-cherry-canning industry. An executive committee would supervise the pact.

Hors d'Oeuvres

TEA PACKERS are out after the male market. There's nothing sissy about a cup of tea, their new advertisements say, mentioning that White Rose helped Columbia win the Rose Bowl victory. But then, what's tamer than a training-table menu?

•

GERMANS today consume only about half as much beer as in 1914, when they were drinking to the health of the Kaiser. Perhaps they aren't so much concerned about their present dictator's physical well-being.

•

THE LARGEST Swiss cheese factory in the world is not in Switzerland, but in Wyoming. And quite possibly the largest producer of "French" wines is not in France but in California.

•

ENTOMOLOGISTS say the 1934 grasshopper has a longer body, stronger wings and a new color—probably knee action, too. Anyway, having much greater plant-destroying potentialities, it may relieve the A.A.A. of its crop-reduction worries.

•

THE SUPERIORITY of white oak for beer barrels is due to natural deposits, called tyloses, which plug the pores of the wood, says the Forest Service. The experts maintain that red oak pitched under pressure to close the pores is o.k. Incidentally, steel barrels have no open pores either.

•

A STARCHLESS POTATO has been grown at McGill University by vaccinating the spud with enzyme-producing bacteria . . . . Odgen Cannery is packing peeled and cooked potatoes . . . . Mineralized milk, said to be effective against anemia, comes from the University of Wisconsin . . . . Oil from tuna livers contains 4,000 international vitamin D units per gram, as compared with 40 for cod-liver oil.

Sugar Bills Will Be Revised To Favor Home Producers

Following a conference between Department of Agricultural representatives and members of the Senate and House sugar bloc, it was agreed to revise the Costigan and Jones bills to provide more favorable treatment of continental producers.

The new fight on the battle-scarred sugar front started when, following a special message to Congress by President Roosevelt, on Feb. 8, legislation making the Secretary of Agriculture virtual dictator of the sugar industry was introduced in both houses. The Costigan bill in the Senate and the Jones bill in the House would make sugar a basic commodity, curtail domestic production, place a processing tax on sugar and give Cuba a favorable allotment to make the island a better market for American commodities. The processing tax, generally placed at 0.5c. a pound, will not be in excess of any tariff reductions.

In his message to Congress, the President placed the preliminary quotas, in short tons, as follows: Continental beets, 1,450,000; Louisiana and Florida, 260,000; Hawaii, 935,000; Puerto Rico, 821,000; Philippine Islands, 1,037,000; Cuba, 1,944,000; Virgin Islands, 5,000.

Packers' Conspiracy Charged By Secretary Wallace

Charging them with conspiracy to control retail meat prices, Secretary Wallace has filed a formal complaint against ten large packing companies and has set April 9 as the date for a hearing. The companies include Armour & Co., Swift & Co., Wilson & Co., Morris & Co., St. Louis Independent Packing Co., Abraham Bros. Packing Co., Cudahy Packing Co., Jacob Dold Packing Co., John Morrell & Co. and Memphis Packing Corp.

These companies furnished each other information on prices to be charged and forced competitors out of business, Mr. Wallace alleges. The packers say they have been falsely accused.

New York Milkshed Troubles Aired at Federal Hearings

Federal control of the New York milkshed is to be desired, but only to the extent of regulating the interstate aspects of the milk program. This seemed to be the predominant note at the federal milk hearings held at New York and Syracuse early in February, although many opinions were voiced.

Dr. Shirley W. Wynne, representing the New York and New Jersey Milk Institute, Inc., whose members distribute 75 per cent of the milk in the metropolitan area, expressed the belief that the advantages of the State milk control board should be maintained in cooperation with representatives of the Department of Agriculture. He said that members of the institute wished to participate in a marketing plan, but that it must apply to the entire milkshed, including the metropolitan area and adjacent markets. He favors a single governing body, such as an interstate board, for the milkshed as a whole.

Much was said by producers against the A.A.A. plan for classifying milk according to the use to which it is put by the distributors.

An unexpected development of the hearings came at Syracuse when Elmer D. Hayes, who presided for the A.A.A., demanded that all books and records of the Dairymen's League Cooperative Association be thrown open for examination by the Secretary of Agriculture. This was regarded as a victory for independent producers, who had criticized practices of the Dairymen's League.

JAMES F. BROWNLEE

The vice-president in charge of sales of General Foods Corp., also president of General Foods Sales Co., is now in Washington in charge of the food division of the Industrial Advisory Board of N.R.A. Mr. Brownlee succeeded Harry Drackett.

CONVENTIONS

MARCH

6-7—Fifth Annual Greater New York Safety Conference, Pennsylvania Hotel.

12-15—American Society of Bakery Engineers, Edgewater Beach Hotel, Chicago, Ill. Victor E. Marx, 1541 Birchwood Ave., Chicago, secretary.

13-16—Fourth Packaging, Packing and Shipping Exposition, sponsored by American Management Association, Hotel Astor, New York, N. Y.

25-29—American Chemical Society, semi-annual, St. Petersburg, Fla., also Cleveland, Ohio. Dr. Charles L. Parsons, Mills Bldg., Washington, D. C., secretary.

APRIL

9-10—Bakery Sales Association, annual, Cleveland, Ohio. Frank Nemetz, 1135 Fullerton Ave., Chicago, secretary.

29-May 3—Associated Bakers of America, Brown Hotel, Louisville, Ky. John M. Hartley, secretary, 360 North Michigan Ave., Chicago, Ill.

30-May 6—International Dairy Congress, Rome and Milan, Italy. O. E. Reed, chief of the Bureau of Dairy Industry, Department of Agriculture, official American correspondent.

—American Dry Milk Institute, Inc., annual, Chicago, Ill. Roud McCann, director, 221 North LaSalle St., Chicago.

Labor Board Backs Workers In Food-Plant Disputes

Production schedules of a number of food manufacturers were upset by labor troubles in February, and in several cases intervention of the National Labor Board was necessary to settle the disputes. A strike of bakery-wagon drivers and inside bakers in Springfield, Mo., was called off Feb. 3 after an agreement between them and their employers had been brought about by the Labor Board. The agreement provided for the inauguration of collective bargaining between the companies and the workers' union. The decision affected Lippman Baking Co., Nafziger Baking Co., Mueller Baking Co. and Colonial Baking Co. Another bakery, Hall Baking Co., Buffalo, N. Y., also was ordered to bargain collectively with its employees. And Whatcom County Dairymen's Association, Bellingham, Wash., was rebuked for reluctance to engage in collective bargaining with a union.

As the result of an investigation by the Labor Board, Tropical Ice Cream & Sherbet Co., Tampa, Fla., was found to be violating the N.R.A. code by paying less than the minimum wages required and was ordered to make complete restitution to the employees.

Five-hundred striking packing-house workers involved in disputes with Theurer-Norton Provision Co., Lake Erie Provision Co. and Ohio Provision Co., Cleveland, were unable to reach an agreement with their employers and the Department of Labor was ordered to step in.

In Philadelphia, 800 workers went on strike at Pennsylvania Sugar Refining Co., the employees protesting that the company had discriminated against union men. In St. Louis, the Milk Wagon Drivers' Union recently submitted demands for an increase in wages. Thirty-one dairies employing about 1,200 drivers are affected by this move.

New Deal Tariffs Favored

Olive oil seems to be the prize illustration in Washington of what can be done under reciprocal tariff agreements. Officials do not go very far in listing other examples. Nevertheless, there is some prospect that Congress will delegate enough of its tariff-making powers to the President to enable him to enter into such agreements. The possibilities of such legislation have been increased by the success of the trades made in connection with the wine quotas.

The tariff on olive oil makes a good talking point, since only one State is interested directly. In this case the consumer is called upon to pay $17 a gallon tax on imported olive oil so that the California growers of ripe olives may have a return from their culls and the ripe olives they cannot sell.

"Break-and-Take" Packages Abolished by Court

What has long been a thorn in the side of the confectionery industry, the "break and take" method of selling candy, was removed by decision of the U. S. Supreme Court, Feb. 5. The court upheld a Federal Trade Commission ruling that this practice constituted unfair competition.

With the break-and-take packages, the consumer paid a price named on a ticket concealed under the wrapper of the piece. Justice Stone branded the practice as "a reprehensible encouragement of gambling by children." The decision was based on a test case involving R. F. Keppel & Bro., Inc., Lancaster, Pa. The third Circuit Court of Appeals previously had rejected the Trade Commission's ruling against the break-and-take packages, and the case was appealed to the higher court.

During the last few years, this method of retailing confectionery has become more and more important until a number of manufacturers have virtually been forced into it against their will. The sales of R. F. Keppel & Bro. totaled $234,000 in a year.

Practical Program Planned For Packaging Meeting

Packaging troubles will take it on the chin at the Fourth Annual Packaging Exposition, to be held in New York this month. And new ideas in package design and methods of packaging will be forthcoming. Conferences on March 13 will cover packing and shipping. Edward Dahill will talk on problems involved in loading for transport. J. R. Watkins will discuss new developments in packing and shipping. The program for the next two days features the clinic on new packages. It includes also a complete story by Arthur S. Allen of the Kingan package modernization, a paper by C. R. Miller on the Eli Lilly & Co. line of packages, a talk by Frank Carson on methods used and results obtained in promotion of Canada Dry products, and a discussion of the Copeland Bill by Dr. Laurence V. Burton. The last day will be given over to the subject of consumer markets, with a talk by Dr. Robert S. Lynd on the "New Deal Consumer" and another by Dr. Paul H. Nystrom on "Meeting the Government and the Competitor Half Way."

Cherry Week Boosts Trade

Taking advantage of the close connection between their product and the famous tree upon which George Washington wielded his hatchet, cherry canners boosted their volume by observing National Cherry Week during the period Feb. 15-22. The success of the canners' program was furthered by widespread cooperation on the part of bakers, restaurant owners, hotel men, grocers and other purveyors of foodstuffs. Begun three years ago as an anti-depression measure, cherry week has grown to importance.

Says Fish Must Be Graded

Marketing grades must be established for fish and fishery products if the industry is ever to be stabilized. This is the opinion expressed by John Ruel Manning, chief technologist, U. S. Bureau of Fisheries. The absence of recognized standards of quality will continue to cause much bad feeling between producer, dealer, and consumer, and losses to all, he feels.

Mr. Manning estimates that the preliminary survey necessary to establish such standards would require about one year. An inspection service to enforce these standards would cost something in the neighborhood of $100,000 a year. This would amount to a cost of 0.0143 cent per pound. Should the cost run as high as $150,000 a year, the cost per pound would be slightly more than 0.02 cent. Assuming two subsequent inspections or re-inspection on an average for every pound of product, the cost probably would be under 0.1 cent per pound.

Various States, notably Virginia, have adopted a system of grading fish.

WHERE CODES STAND

APPROVED

Beet sugar Industry (Labor Provisions)	Oct. 27	NRA
Chewing Gum Manufacturing Industry	Jan. 30	NRA
Coffee Industry	Feb. 6	NRA
Fishing (Master Code)	Feb. 26	NRA
Imported Date Packing Industry	Nov. 11	NRA
Macaroni	Jan. 29	NRA
Raw Peanut Milling	Jan. 12	NRA
Retail Food & Grocery Trade (Labor Provisions)	Nov. 15	NRA
Retail Trade — Fair Trade Practices	Oct. 21	NRA
Southern Rice Milling Industry.	Nov. 21	AAA
Wholesale Food and Grocery Trade	Jan. 4	NRA
Wholesale Food & Grocery Trade (Labor Provisions)	Nov. 15	NRA
Associated Industries		
Can Manufacturers' Industry.	Dec. 15	NRA
Canning & Packing Machinery.	Jan. 27	NRA
Cap & Closure Industry	Oct. 20	NRA
Crown Manufacturing Industry	Nov. 1	NRA
Merchandise Warehousing	Jan. 27	NRA
Packaging Machinery Industry & Trade	Oct. 31	NRA
Fiber Can & Tube Industry	**Feb. 25**	**NRA**

HEARINGS SCHEDULED

Stockyards	Mar. 2	AAA
Bottled Soft Drinks Industry.	Mar. 8	NRA
Imported Green Olive Industry	Mar. 9	NRA
Wine (Labor Provisions)	Mar. 12	NRA
Cocoa & Chocolate Manufacturing Industry	Mar. 12	NRA
Candy Manufacturing Industry	Mar. 13	NRA
Wholesale Confectioners	Mar. 14	NRA
Retail Confectionery Trade	Mar. 15	NRA

Court Ruling Favors Baker

Municipalities legally cannot discriminate against outside parties in the matter of license fees for door-to-door delivery. This is in accordance with a decision by the Court of Quarter Sessions of the Peace, Montgomery County, Pa. The case involved a driver for Freihofer Baking Co., Philadelphia, who was arrested by the borough of Conshohocken for canvassing his route without a license. Local merchants were not required to obtain such a license, and the court ruled that "the enforcement of the ordinance against the defendant constitutes unfair and illegal discrimination . . ."

Concentrates

There is a movement on foot to put up as many as ten factories in the South to make starch from sweet potatoes; a plant being erected in Georgia will have an annual capacity of 360,000 bu. of the tubers . . . Fermented and distilled pineapple juice may take the place of sulphur dioxide as a preservative for dried fruits, especially apples, according to Department of Agriculture Chemists . . . Specialty Confectioners' Association, a new candy group, and Zone 7 of National Confectioners' Association have gone on record as opposed to the one-shift, 40-hour-week provision of the proposed candy code.

Amendment of the Farm Act to extend acreage reduction program on a wider, more permanent front probably will be proposed at this session of Congress . . . . Certified Seafoods Corp., formed by a group of the premier seafood packers on the Pacific Coast to increase consumer confidence in canned sea foods, will use a label certifying quality and cleanliness as attested by a doctor or chemist.

National Confectioners' Association will hold its annual meeting in New York, June 11-15, in conjunction with an exposition by the allied industries . . . . The Fourth Annual National Premium Exposition and Convention, sponsored by Manufacturers' Merchandise Advertising Association, will be held in Chicago, the week of May 7.

The use of "starters" is not a very satisfactory method of improving the quality of sauerkraut, studies at New York State Agricultural Experiment Station have shown . . . . Apples recently shipped from Portland, Ore., to New York by boat were sprayed with an extremely thin coating of paraffin to keep them fresh . . . An exhibit of new products created by chemistry is scheduled to open about the middle of March in Newark (N. J.) Museum.

MEN . . . JOBS . . . AND COMPANIES

Industry

ALBERS BROS. MILLING CO., Seattle, Wash., began construction early last month of a grain elevator to cost $150,000.

ANHEUSER-BUSCH, INC., recently filed an injunction suit in St. Louis Circuit Court to restrain Adolph Busch, Inc., from operating under that name in the manufacture and sale of beer and other cereal and carbonated beverages.

T. BALLANTINE & SONS, Newark (N. J.) brewers, have resumed the production of beer, suspended during prohibition and supplanted by malt products manufacturing.

BIRDSEYE LABORATORIES, Gloucester research department for Birdseye Packing Co., has been closed. Clarence Birdseye is now working on a private enterprise. Some members of the research staff have been transferred to laboratories in other cities and some have joined other companies.

BURNHAM & MORRILL CO., Portland, Me., has announced plans to build a modern canning plant at Fryeburg, which, it is said, will be the largest in that section.

CAMPBELL SOUP CO., Camden, N. J., has announced that specifications for bids have been released providing for additions to company kitchens at Chicago at a cost of $1,030,000. One project is a tomato-pulp plant, costing $150,000.

CAROTA BOTTLING CO., Greenville, S. C., will manufacture, according to the terms of its charter, a beverage made "from pure carrot juice, sweetened and carbonated."

J. B. CARR BISCUIT CO., Wilkes-Barre, Pa., recently added to its plant a three-story section, 42x35 ft., and a one-story section, 28x110 ft.

CLOVERLEAF CREAMERY CO., Kendallville, Ind., will supervise operations at the Breyer Ice Cream Co. plant recently acquired by Kraft-Phenix Cheese Co., Chicago.

DE SOTO CANNING CO., Arcadia, Fla., and ECKERSON FRUIT CANNERIES, Sanford, opened Feb. 1. The former packs grapefruit hearts, grapefruit juice and Half-and-Half, consisting of equal parts of grapefruit and orange juice; the latter packs grapefruit juice and hearts.

DOWN SOUTH CANNING CO., Atlanta, is canning seasoned, candied sweet potatoes, sliced and ready to serve.

GENERAL ICE CREAM CORP. will spend about $100,000 on improvements to its Springfield (Mass.) plant.

KRAFT-PHENIX CHEESE CORP. mayonnaise plant now in Newark will be located in Jersey City after April 1, with 150 additional employees.

LAKE SHORE SUGAR CO. and CENTRAL SUGAR CO., both under the same control, were sole bidders at receivers' sales of Holland-St. Louis Sugar Co. plants at Holland, Mich., and Decatur, Ind., respectively. Both bids are subject to court approval.

LAND O' LAKES CREAMERIES, INC., Madison, Wis., has contracted to market the total output of the National Cheese Producers' Federation, Plymouth, Wis. Stamping each cheese with the State name will prevent the cheese from losing its identity.

H. A. MCDONALD CREAMERY CO., Detroit, began deliveries on Feb. 1. H. A. McDonald, president, was formerly president, Detroit Creamery Co., National Dairy Products Corp. unit.

POTTER CONFECTIONERY CO., Cambridge, Mass., has been acquired by Daggett Chocolate Co., also of Cambridge, through the purchase of its capital stock.

SIELOFF PACKING CO., St. Louis, has completed additions to plant costing $350,000 and more than doubling plant capacity.

WINDHAM COUNTY FRUIT GROWERS' ASSOCIATION, Brattleboro, Vt., will soon begin construction of a two-story cold-storage plant, 100x60 ft., costing $50,000.

PERSONNEL

H. E. BARNARD, director, Corn Industries Research Foundation, has retired. New officers of the trade group are G. M. MOFFETT, president; D. K. DAVID, vice-president; and PENDLETON DUDLEY, secretary and treasurer. New York headquarters are at 150 Broadway. Dr. Barnard has returned to his old firm, H. E. Barnard, Inc., Indianapolis, as consultant and adviser to the food industries.

LOUIS W. BORNWASSER, for 25 years vice-president and treasurer, Bornwasser Packing Co., Louisville, has been elected president, Emmart Packing Co., succeeding J. E. Brown, retired.

D. F. BULL, president, Cream of Wheat Co., Minneapolis, has been appointed special adviser to the Industrial Advisory Board during hearings on the canning industry code.

C. J. BURTHE is president, Klotz cracker factory, New Orleans, succeeding the late J. J. Thomas.

FRED CAMPBELL, Salem, was elected president, Ohio Ice Cream Manufacturers' Association, in convention last month.

R. J. CLARK, recently appointed chief chemist, Mueller Bakeries, Inc., Grand Rapids, Mich., will continue research with the American Dry Milk Institute on the use of dry skim milk in cake baking.

GORDON C. CORBALEY, formerly president, American Institute of Food Distribution, one of the founders of American Marketing Society and member of Food Industries Advisory Board from June to November, 1933, now heads Gordon C. Corbaley & Associates, New York. His firm will bring together executives having problems in food distribution and provide counsel on their solution.

GORDON C. CORBALEY
Becomes Food Distribution Counsel

C. F. EVERS, formerly research chemist, Birdseye laboratories, Gloucester, Mass., is now in charge of manufacturing and chemical control operations at Ste. Pierre Smirnoff Fils, Inc., New York.

E. C. FEAIRHELLER, formerly assistant treasurer, Wilbur-Suchard Chocolate Co., Inc., Philadelphia, has become treasurer, succeeding Thomas Waddell, now with Rockwood & Co., Brooklyn.

J. S. Hargett, president, Wichita Mill & Elevator Co., Wichita Falls, Texas, has been elected president, Great West Mill & Elevator Co., Amarillo, Texas.

W. L. HEALD, chief chemist, Omaha (Neb.) Flour Mills Co., assumes charge

of the laboratory and production control department, Flour Mills of America, Inc., Kansas City, on March 1, succeeding the late Harry G. Weaver.

J. R. HENRY, formerly assistant production manager, National Biscuit Co., Chicago, has been appointed production manager to direct operations in all company bakeries from New York. P. J. SUNDHEIM, his former assistant, succeeds him in Chicago.

JACOB HOERHAMMER, Terre Haute, was elected president, Indiana Bakers' Association, in convention last month.

H. J. HUMPHREY, for many years in charge of the Albion (N. Y.) plant of Snider Packing Corp., is assistant to the executive vice-president at the company's Rochester headquarters.

GEORGE MACDONALD, formerly Canadian manager, Quaker Oats Co., recently became general sales manager, with headquarters in Chicago.

R. J. MCCORMICK, formerly New England manager, Shredded Wheat Co., and later with the sales department, National Biscuit Co., is manager of the soap department, E. C. Edwards Co.

E. D. MCMANUS, formerly general manager, East St. Louis Armour & Co. plant, has been appointed district manager at Atlanta, succeeding R. E. Stringfellow, transferred to Chicago as territorial sales supervisor for several southern and mid-western districts.

H R. MOTT, formerly vice-president, Nehi, Inc., Columbus, Ga., has succeeded the late G. A. Hatcher as president.

A. G. OLSEN, Battle Creek, Mich., for 10 years with General Foods Corp., has been appointed director of research, Walter Baker & Co., Inc., Dorchester, Mass.

A. E. PHILLIPS, formerly with Welch Grape Juice Co. and H. J. Heinz Co., and past president, A.G.M.A., has become vice-president, Tea Garden Products Co., San Francisco.

PROVIDENCE (R. I.) PROVISION MARKET, INC., plans to erect a meat-packing house and refrigeration plant costing about $1,762,000 at Providence.

JACOB RUPPERT, president; R. A. HUBER, vice-president, Anheuser-Busch, Inc., vice-president; C. D. WILLIAMS, secretary; and W. C. KRUEGER, president, Krueger Brewing Co., Newark, N. J., treasurer, were reelected at the United States Brewers' Association meetings last month. The convention, held at Atlantic City Feb. 6-7, was the first in 17 years.

J. T. SATCHWELL, Cincinnati, is now president, Ohio Creamery Owners' Association.

OTTO SCHNERING, Curtiss Candy Co., Chicago, is president of the newly organized Specialty Confectioners' Association.

JUNIOR OWENS
A.B.C.B. Secretary Dies

CHARLES O. TOWNSEND, chief of the sugar division, United States Tariff Commission, retired from federal service Jan. 31. He had served for more than ten years on the Tariff Commission and more than 32 years as a government employee.

JOHN R. WAGNER, Kroger Grocery & Baking Co. supervisor, Pittsburgh branch, has been promoted to the superintendency.

A. P. WOLF, Hood Bay Canning Co., Seattle, was elected president, Northwest Salmon Canners' Association, at its annual business meeting last month.

DEATHS

A. A. BUSCH, 68, president, Anheuser-Busch, Inc., near St. Louis, Feb. 13. He shot himself, having failed to gain relief from a complication of diseases. In 1913, he succeeded his father, Adolphus Busch, who died in that year, as head of the various corporations under his control. During prohibition years, his brewing interests manufactured soft cereal beverages, and at the same time he established a corn-products refinery and a yeast-manufacturing business. Previous to the enactment of the 18th Amendment, he had urged the replacement of domestic saloons with barless ones as used in Germany.

C. H. HARRIS, 70, senior member of Harris-Boyer Co., Johnstown (Pa.) bakers, at Charlottesville, Va., Feb. 3. He helped to found his firm in 1894.

JUNIOR OWENS, 49, executive secretary, American Bottlers of Carbonated Beverages, at Washington, D. C., Feb. 19. Following newspaper work in several Mid-Western cities, he became secretary of the association in March, 1920, and served continuously since that time.

WALTER D. PHILLIPS, 58, at Scarsdale, N. Y., Jan. 31. Before retiring in 1929, he had been general manager and later vice-president of American Diamalt Co., Cincinnati. During six months of 1932 he was vice-president in charge of sales, Kansas Flour Mills Corp.

W. P. REED, 52, president, Reed Candy Co., at Chicago, Feb. 7. In the confectionery business since 1894, he had been president of the Reed company since 1925. He was formerly a director of the National Confectioners' Association.

G. B. ROBBINS, 72, at Burlingame, Calif., Feb. 9. President of a California land company, he served 35 years as vice-president, Armour & Co., until his resignation in 1922.

W. E. WITHGOTT, Talbot Packing & Preserving Co., Easton, Md., at Baltimore, Feb. 8. He was a member of the State Legislature and a director of National Canners' Association.

MARCELLUS ZINSMASTER, 58, president, Zinsmaster Breads, Inc., Des Moines, Iowa, near Salt Lake City, Feb. 23. He was killed in an airplane crash. He was a member of the board of governors, American Bakers' Association.

Associated Industries

APPLIED SUGAR LABORATORIES, INC., New York, has a new department in charge of F. M. Waters to advise clients on the preparation of technical literature and the formation and engineering of sales campaigns.

GUS A. BINZ, sales manager, and CLEMENT WELLS, president, Sarco Co., Inc., are president and vice-president, respectively, of recently formed Wilbin Instrument Corp., New York.

T. H. BISSELL, 45, advertising manager, International Nickel Co., since 1922, died Feb. 19 at New York.

CANNING AND PACKING MACHINERY and equipment industry code, approved by Administrator Johnson Jan. 27, went into full effect last month.

W. R. CATHCART, technical director, Corn Products Refining Co., died Feb. 22 at Asheville, N. C. His reputation as a consulting chemical engineer was international.

JOSEPH EICHBERG, formerly first vice-president, American Lecithin Corp., has been elected president to succeed J. W. Conway.

PNEUMATIC SCALE CORP., LTD., will handle manufacturing operations of recently acquired McDonald Engineering Corp. at Norfolk Downs, Mass.

TOLEDO (OHIO) PRECISION DEVICES, INC., recently awarded an industrial fellowship at Mellon Institute of Industrial Research, Pittsburgh, to Marion E. Coulter, for the investigation of food merchandising problems, particularly storage and display during distribution.

BUSINESS TRENDS

Distributors' Stocks Mount, Canners' Holdings Fall

Stocks of seven canned foods in the hands of 460 distributors were 22.5 per cent larger on Jan. 1, 1934, than on the same date in 1933. Stocks of the same foods in representative canners' hands were 17.4 per cent smaller the first of this year than the first of last. Contrary to general figures, canned-peach stocks in distributors' hands were 18.6 per cent less than the preceding year, while they were 18 per cent greater in canners' hands.

Figures are those of the Foodstuffs Division, Bureau of Foreign and Domestic Commerce, and include stocks of peas, corn, tomatoes, green and wax beans, peaches, pears and pineapple.

Frozen and preserved fruits in cold storage on Jan. 1, according to National Canners' Association, totaled 59,915,000 lb., 14,680,000 less than the Jan. 1, 1933, figure, and about as much less than the five-year average for Jan. 1. Cold-storage stocks of apples and pears also were below average.

BASIS FOR THE CURVES

Retail food prices, factory employment, factory payrolls and wholesale prices are based on indexes of the Department of Labor. Cost-of-living index is that of the National Industrial Conference Board. Electrical-power-consumption figures are furnished by *Electrical World*.

Foods Lead Rises

Commodity prices continued their upward trend during the first half of February, reaching their highest point since December, 1930. Food—including packing-house products, sugar, coffee, cocoa and dairy products—led the advance. Textiles also rose decisively.

Business activity in February recorded gains over January, steel and automotive operations leading the way. Textile, coal and electric-power industries stepped up production considerably to meet increasing demand, stimulated in the latter-named cases by cold weather.

The Business Week Index of business activity stood at 66.4 per cent of normal for the week ending Feb. 17—1.8 per cent higher than on Jan. 13 and 4.0 per cent higher than on Dec. 16, last year.

Wholesale prices reported by U. S. Department of Labor for the month ending Feb. 10 advanced to 73.7—2.0 per cent above the three-year peak reached Jan. 13 and, previous to that, Nov. 18, last year.

All commodities during the month ending Feb. 17 were up 3.0 per cent in the New York *Journal of Commerce* weighted price index; grain rose 0.8 and food 8.5 per cent, respectively.

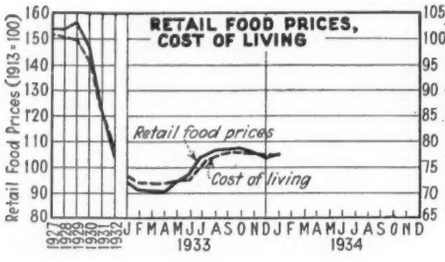
Butter Storage Stocks Kept Near Average Figure

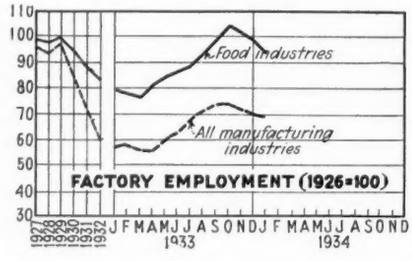
Governmental and commercial reduction of butter storage stocks during January by 35,198,000 lb. brought commercial holdings to within 4,000,000 lb. of the five-year average for Feb. 1, which is 34,422,000 lb. Commercial withdrawals during January of 20,392,000 lb. were nearly five times those of January, 1933, only 4,210,000 lb.

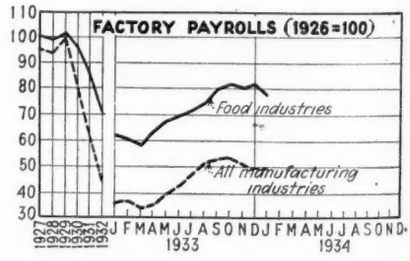
On Feb. 1, about 23,000,000 lb. had moved out of storage to be distributed in government relief, leaving about 25,000,000 lb. in storage under government ownership and 12,000,000 approved by the Department of Agriculture for purchase. Thus, of the 76,051,000 lb. in storage on Feb. 1, about 38,000,000 lb. were commercial stocks.

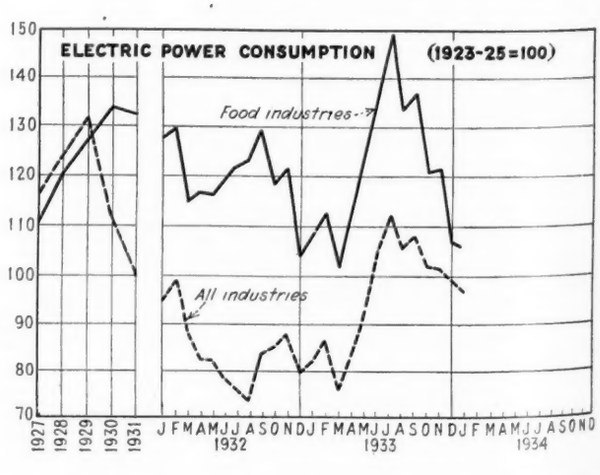
Packers' Profits Announced

If profits from all sources of the meat-packing industry during 1933 had been added to the price paid the livestock producer, that price would have been increased only about 0.14c per pound. On the contrary, if these same profits had been divided among consumers of meat and lard in the United States, each consumer—using an average of about 157 lb. annually—would









have received about 25 cents. So states the Institute of American Meat Packers in commenting on meat packers' profits.

The bulletin further states that the average profit per dollar of sales by the meat-packing industry during the ten years ending 1931 was 0.88 per cent, or 0.88c., while the average profit per dollar of sales by all manufacturing industries during the same ten years was 4.72 per cent, or 4.72c. The comparisons are based on income tax returns.

Milk Distributors' Profits Show Decline in 1933

Total net profits of distributors in four of the country's largest milksheds during 1933 were less than during any of the five years ending Dec. 31, 1933. In three of the four sheds audited by A.A.A. accountants, distributors' profits were the smallest of the five years, while in one shed they were the smallest except in 1932.

These statements are based on figures announced in Secretary Wallace's Madison (Wis.) address. Percentage of yield net profit is based on net plant investment, omitting appraisal, appreciation, idle property and adjustment of excessive reserves for depreciation, where available.

A.A.A. to Reduce Wheat Land Acreage by Further Cut

United States obligations under the international wheat agreement will be met by a further reduction of 5,400,000 acres of wheat land, the A.A.A. recently announced. Canada, Argentina and Australia are expected to follow suit. However, reduction of wheat production is not the only goal of the movement toward international accord; consumption of wheat and wheat flour in greater volume in all countries involved is sought.

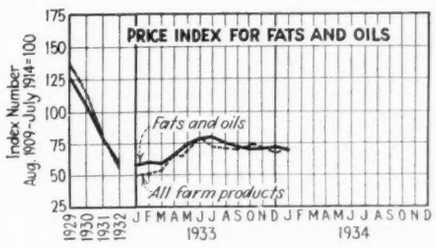
As has been pointed out in A.A.A. hearings, consumption has been severely reduced abroad because of inferior bread made from poorer grades of native grain and imported flour and sold at high prices. Domestic consumption of bread, food authorities hold, has also been reduced, chiefly by the use of poorer grades of flour. These inferior grades of flour require fewer bushels of wheat per barrel and thus lessen the demand for wheat. Furthermore, tariff, quota and depression walls have kept surpluses here from moving into natural markets. A somewhat surprising development in the situation is the German wheat surplus.

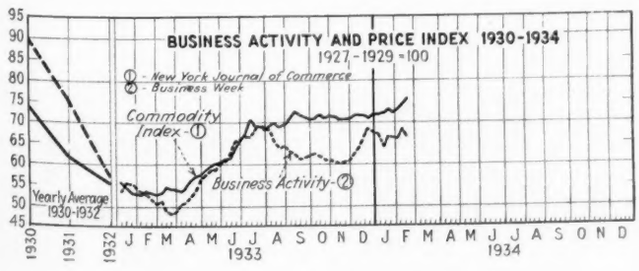
		Chicago[1]	Boston[2]	Philadelphia[3]	St. Louis[4]
1929	Net Plant Investment	$17.8[5]	$ 7.8	$16.5	$ 4.2
	Net Profit	4.8[5]	1.9	5.9	.9
	Yield Net Profit	27%	25%	36%	21%
1930	Net Plant Investment	$19.0	$ 9.3	$16.5	$ 4.6
	Net Profit	7.2	2.7	6.0	1.0
	Yield Net Profit	38%	29%	36%	21%
1931	Net Plant Investment	$18.8	$10.6	$16.4	$ 5.0
	Net Profit	6.2	2.8	5.7	.6
	Yield Net Profit	33%	26%	35%	13%
1932	Net Plant Investment	$17.9	$10.5	$15.8	$ 4.9
	Net Profit	3.2	1.6	3.6	.5
	Yield Net Profit	18%	15%	23%	10%
1933	Net Plant Investment	$16.8	$ 9.8	$15.0	$ 4.7
	Estimated Net Profit	1.8	1.6	3.2	.3
	Yield Est'd Net Profit	10%	16%	21%	7%
Total Net Plant Investment		$90.5	$48.2	$80.4	$23.6
Total Net Profit		23.4	10.8	24.7	3.4
Average Yield Net Profit		25%	22%	30%	14%

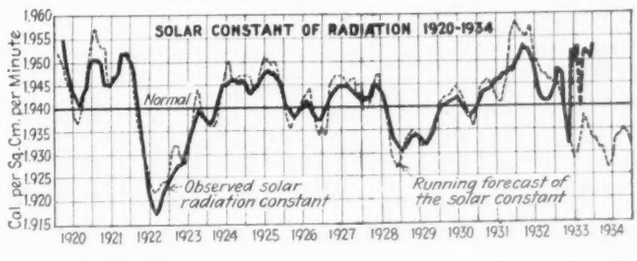
[1]Net profit is net operating profit before deducting income tax.
[2], [3], [4] Net profit after deducting income tax.
[5]Millions.

CONSTRUCTION NEWS

	Pending (thousands)	Awarded February (thousands)	Total Awarded 1934 (thousands)
Bakery Products	$40	$45	$104
Beverages	1,852	352	1,943
Canning and Preserving	327	99	99
Confectionery	75	....	.....
Grain Mill Products	50	....	200
Ice, Manufactured	110	30	30
Meats and Meat Products	138	28	96
Milk Products	548	205	406
Sugar	1,500	....	.....
Miscellaneous	144	....	.....
Total	$4,784	$759	$2,878






SOLAR CONSTANT OF RADIATION 1920-1934
Cal. per Sq. Cm. per Minute
Normal
Observed solar radiation constant
Running forecast of the solar constant

INDICATORS

CANADIAN refined-sugar exports during 1933 reached 11,582 long tons, 6,798 tons over 1932 shipments, the first material increase since the peak export year, 1925.

SALES OF CONFECTIONERY during 1933 by 348 concerns representing all types of manufacturers were 1.0 per cent less than in 1932.

PRODUCTION OF FLOUR AND FEED during 1933 declined approximately 4.0 per cent from that of 1932, according to *Journal of Commerce* figures.

FARM STOCKS OF WHEAT on Jan. 1, totaling 194,000,000 bu., were smallest as of the same date since 1927.

MEAT CONSUMPTION during 1933, 12,984,000,000 lb., according to government figures, was 5.2 per cent greater than in 1932 and 3.7 per cent greater than the five-year average.

GERMAN RYE AND WHEAT FLOUR EXPORTS during the first eleven months of 1933, 26,637 tons and 100,000 tons, respectively, were five and eight times larger, respectively, than during the same period, 1932.

COLD-STORAGE HOLDINGS OF FISHERY PRODUCTS in the United States on Jan. 15 were 44,721,710 lb., 27 per cent under the five-year average for that date and 2.0 per cent under the year before.

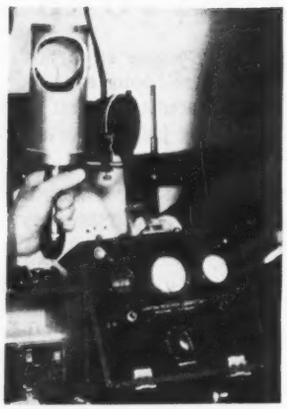
JAPANESE CANNED-CRAB EXPORTS to the United States during 1933, 155,000 cases, were 25 per cent heavier than during 1932.

MAINE POTATO PRICES per barrel on Feb. 15, $2.25 to $2.35, were nearly four times the prices prevailing on the same date in 1933.

EXPORTS from the United States during 1933 were worth $64,000,000 more than in the preceding year, while imports increased in value by $126,000,000. The favorable balance was reduced, therefore, about $62,000,000.

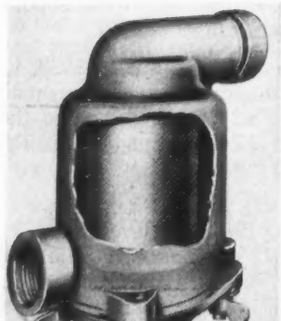
CALIFORNIA PACKING CO. late last month declared a 25-cent common stock dividend payable March 26 to stockholders of record on March 10. The payment, the first since September, 1931, marks the return of the company to a profit-making basis, it has been announced.

NEW • EQUIPMENT • FOR



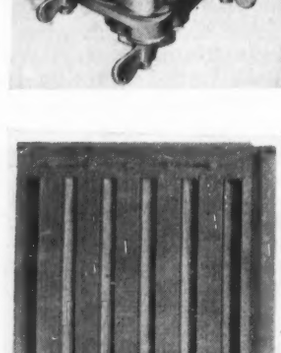
Measures Ultra-Violet

The number of "health units" in ultra-violet radiation are counted by a new ultra-violet meter developed at the General Electric Co., Nela Park, Cleveland, Ohio. This device employs a photo-electric cell which, when actuated by the radiation, passes a small current that accumulates on a condenser until it reaches a sufficient quantity to spill over and turn a counting relay. Power for operating the counting relay, which is similar in appearance to the odometer of an automobile, is obtained through a vacuum tube hook-up. The photo-electric cell is connected by means of an extension wire to the counting mechanism, which is inside a small portable cabinet. A companion instrument gives an instantaneous reading of the strength of any given source of ultra-violet radiation. These instruments are sensitive to that biologically effective ultra-violet radiation lying in the region between 2,800 and 3,200 Angstrom units.



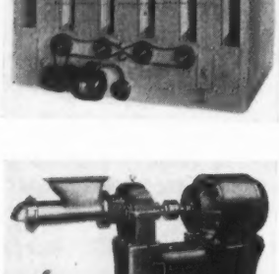
Juice Strainer

Broken seed, fiber and other objectionable particles are removed from pulp, catsup, tomato juice and fruit juices by a strainer manufactured by F. H. Langsenkamp Co., 229 East South St., Indianapolis, Ind. This strainer ordinarily is placed in the line leading to the filler. The only attention required is cleaning twice daily; this may be done without interference with production, the manufacturer states. Made in one standard size, the strainer may be connected into any sized line. It is of non-corrosive metal, with screens of various perforations—0.020, 0.023, 0.027, or 0.033 in. The screens are 2½ times the size of the inlet; they are interchangeable.



Self-Cleaning Filter

Driven by a motor and cleaned by an integral vacuum cleaner, an air filter announced by Coppus Engineering Corp., 344 Park Ave., Worcester, Mass., not only operates automatically but also cleans itself. The filter medium is a wool-felt filter curtain arranged in zigzag fashion over rolls. The edges are reinforced by belts which keep the curtain stretched laterally and provide a seal against passage of dirty air around the edges. The bottom rolls are geared to a small motor which is started by a time clock or with the aid of a sensitive pressure gage when a maximum air resistance is reached. The curtain moves slowly over the rolls and passes over a special suction nozzle connected to the vacuum cleaner, which starts simultaneously with the curtain motor.

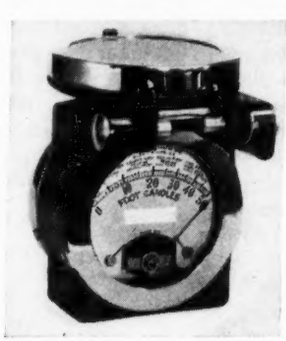


Meat Grinder

Safety, silent operation and high capacity are said to be embodied in the meat grinder announced by Allbright-Nell Co., 5323 South Western Blvd., Chicago, Ill. The safety and high capacity features are the results of a new type of feed screw the pitch of which is large at the receiving end and small near the cutter end. It is not necessary to force the meat through the throat of the hopper, and the machine will handle more meat than two men can feed into it at one time, according to the manufacturer. To make the machine silent in operation, the usual spur gears have been replaced with a herringbone drive.

Checks Lighting

Only a few seconds is needed to check lighting conditions at any point in the plant with the "Right Light" meter announced by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Embodying a recently developed photo-voltaic cell which changes light directly into electric current without any auxiliary electrical supply, the instrument indicates on a micro-ammeter the intensity of the light in foot-candles. The dial also is marked in zones denoting the minimum amount of light needed for specific types of work. A hinged cover arrangement in which the cell is mounted protects the instrument against breakage and at the same time permits swinging the photo cell to a position 90 deg. from the dial, a convenience in horizontal surveys of light intensity.

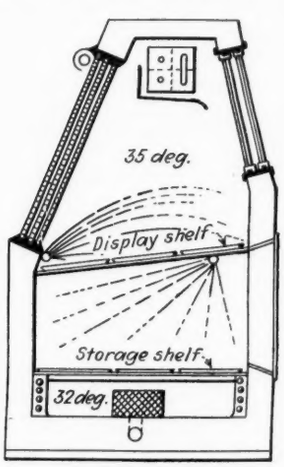


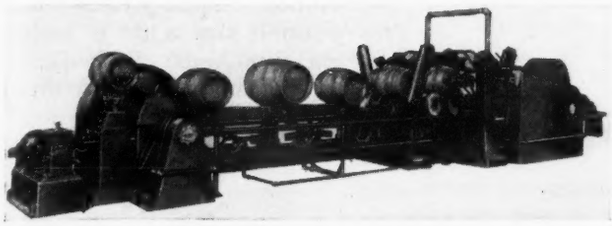
Dryer Has Central Heating Mandrel

Equipped with a central heating mandrel, a horizontal steam dryer introduced by W. S. Tyler Co., Cleveland, Ohio, has a large radiating surface. This arrangement doubles the number of times the material is alternately heated and showered through the air. This increases aeration and exposes new surfaces to the drying element. The central heating mandrel consists of the preheating chamber surrounded by a steam jacket, on the outer surface of which are welded the heat-transfer flanges. The mandrel serves the double purpose of preheating the air coming into the dryer and of imparting heat to the flanges. With this dryer the condensate flows in the same direction as the steam, doing away with steam and water pockets. The machine has an integral air preheater. It provides full control over drying temperatures, the manufacturer reports.

Display Case Keeps Fish Cold, Wet

Fish are kept continuously cold and wet in an automatic mechanically refrigerated display and storage case, announced by Seeger Refrigerator Sales Corp., 232 Fourth Ave., New York, N. Y. The case has two shelves, one for display and the other for storage. Sprays throw water over both of these shelves, keeping the fish from drying and removing odors. Controlled by a time clock, the water flows intermittently for 30 seconds out of each hour. Coils in the bottom of the case cool the spray water to 32 deg. F. Another coil in the top holds the space above the display shelf at 35 deg. The case is made in 4-, 6- and 8-ft. sizes, these requiring from ¼ to ½-hp. The case will accomodate three times as many fish per foot of length as those using ice, and it will operate at one-fourth to one-third the cost of the iced cases, the manufacturer states. And, since the fish are kept wet, they will remain in good condition for long periods.





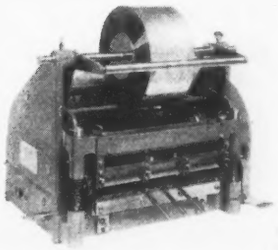
Automatic Washer For Barrels

Beer barrels and kegs of various sizes may be cleaned inside and out at a rate of about 180 per hour. This is the capacity of an automatic washing machine announced by Link-Belt Co., 910 South Michigan Ave., Chicago, Ill. The machine has a series of washing stations, and it employs transport beams for moving the containers from one station to the next. Special feeder arms deliver the containers to the machine automatically, picking them up one at a time from low loading skids. At the first soaking station, sprays of water are directed against the outside of the barrel, and a combined bung finder and water pipe delivers water into the barrel. Sprays also are directed against the outside of the barrel at the scrubbing station, which is next in line. Here the barrel is revolved at high speed under the pressure of self-adjusting brushes applied to the ends and top side to clean off the outside dirt. At the next station a bung finder stops the barrel in a draining position. Then the container is moved over two hot-water nozzels and one cold-water nozzle in succession, where revolving sprays clean and rinse out the inside surface. The containers drain between washing stations, and final drainage takes place at the end of the machine.

Floor Resurfacer

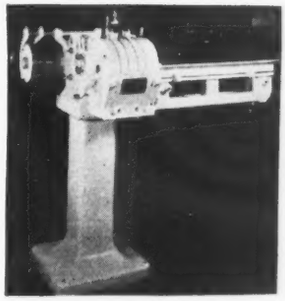
Floor repairing and resurfacing material that is said to bond to concrete, wood, brick, asphalt or composition floors and to be ready for traffic within 36 hours, is announced by Stonhard Co., 401 North Broad St., Philadelphia, Pa. It is a plastic material which is mixed with sand and cement before applying. It gives a resilient flooring that will withstand heavy traffic without breaking, according to the manufacturer. Where concrete floors are to be patched or resurfaced, chipping, roughening or acid washing are not necessary. The resurfacer is applied cold.

Cuts and Glues Sheets for Wrapping



Hand wrapping of products in foil or transparent cellulose is speeded up by a gluer and sheet cutter marketed by Wrapade Machine Co., 215 Central Ave., Newark, N. J. Feeding from rolls, the machine delivers sheets of the proper size with the adhesive applied. By using rolls, a saving of from 17½ to 25 per cent is said to be effected over wrappings in sheet form. The machine makes 55 to 60 cuts per minute, delivering the sheets when the operator presses a lever. It handles any length of sheet up to 20 in., with a maximum width of 12 in.; maximum roll diameter is 8 in. The machine can be used as a sheet cutter only.

Two-in-One Corn Cutter

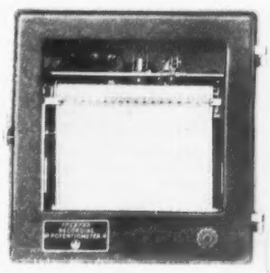


What is said to be the only machine that can be used for cutting corn either for whole-grain or cream-style packing has been introduced by Sprague-Sells Corp., Hoopeston, Ill. This cutter is a rotary machine with two separate heads. The second head can be equipped with either a second set of cutting knives for producing cut kernel corn or double-cut whole-grain corn. Or it may be fitted with rotary scrapers that turn out crushed corn. The rotary scrapers are said to yield 10 to 25 per cent more corn and juice in cream-style cutting than earlier machines. The Universal cutter is provided with equalizing mechanisms on the feed-roll shafts. All gears are inclosed in oil-tight housings. Driven by a 2-hp. motor, the machine has a capacity of 125 ears per minute.

"Steam Trap" Has No Moving Parts

No working parts are used in the condensate removal device marketed by Coe Manufacturing Co., Painesville, Ohio. This "Drainator" does the work of the steam trap, but it utilizes the thermodynamic properties of the steam and hot water in regulating the flow of condensate. It consists of an adjustable orifice and a series of baffles and chambers. It has a pulsating action of sufficiently high frequency to maintain an almost constant water seal in the first chamber, and produces, in effect, a continuous discharge of condensate, the manufacturer states. Air binding is impossible and air vents or bypasses are not neded. The presence of air accelerates the rate of flow through the orifice so that the water seal is broken for longer intervals, permitting rapid elimination of air and other non-condensible gases. With cold condensate, such as is present in starting up, the capacity is about double that under normal conditions. The Drainator is adapted to both high- and low-pressure steam and to large or small apparatus.

Recording Pyrometer Has New Balancer



Large movement of the pen, or print wheel, for a small galvanometer deflection is produced by a new type of balancing mechanism in the Recording Potentiometer Pyrometer developed by Foxboro Co., Foxboro, Mass. The balancing mechanism consists essentially of a V-shaped drive cam and friction roller. The sensing fingers position the friction roller according to the position of the galvanometer pointer. The V-shaped cam then engages and rotates the roller which transmits its straight-line motion to a slide-wire contact. The pen, or print wheel, being mounted integrally with the slidewire contact, moves with it. The recorder is housed in a fume-tight and dustproof case so constructed that the mechanism can be swung out for inspection. The multiple record instrument will record up to six temperatures on one chart, each record being identified by color. Built for several different scale ranges, the instrument will operate at a temperature range as low as from 60 to 140 deg. F.

The Manufacturers • • Offer • •

Refrigerating Units—Steam-jet and centrifugal types. Ingersoll-Rand, 11 Broadway, New York, N. Y. Illustrated folder.

Steels—Stainless and heat-resisting alloys. United States Steel Corp., 71 Broadway, New York, N. Y. Booklet, 45 pp.; artistically printed, illustrated and decorated.

Operators' Record—Truck and bus performance and cost. Dodge Bros. Corp., Detroit, Mich. Booklet, 52 pp.; detailed clerical instructions included.

Corrosion Prevention — Protecting equipment from refrigerating brine attack. Frick Co., Inc., Waynesboro, Pa. Bulletin No. 164-A, 19 pp.; bibliography.

Air Conditioning—Equipment for various buildings, including food factories. Frigidaire Corp., Dayton, Ohio. Booklet, 30 pp.; many helpful illustrations.

Hoists—Construction and applications of type "R." Harnischfeger Corp., 4401 West National Ave., Milwaukee, Wis. Bulletin No. RH-1, 19 pp.; well illustrated.

Shipping Aids—Steelstrap and other reinforcing agents. Acme Steel Co., Chicago, Ill. Booklet, 16 pp.; very well illustrated.

Ball Bearings — Dimensions, load data and list prices. New Departure Mfg. Co., Bristol, Conn. General Catalog, Ninth Edition, 127 pp. Efficiently organized and indexed, this booklet contains all the necessary information for selecting the bearings for the particular need.

Rotary Pumps — For heavy-duty service, including viscous-liquid handling. Connersville Blower Co., Inc., Connersville, Ind. Bulletin 60-B10; illustrated leaflet.

Electric Trucks—Advantages and available models. Brockway Motor Co., Inc., Cortland, N. Y. Illustrated folder.

Canning Equipment—Modern machinery for packing all sorts of food products. Sprague-Sells Corp., Hoopeston, Ill. General catalog No. 200, 223 pp. Each machine or device is fully described and illustrated. Specification tables are included where needed. Tables of sizes, weights, measures and distances, as well as other informative data, are included in the final pages.

Truck Tires — Balloon and solid types. B. F. Goodrich Rubber Co., Akron, Ohio. Booklet, 39 pp.; contains specification tables.

Package Wrapping—"Permissible Packages for Special Commodities" and "Corrugated Boxes and How to Use Them." Hinde & Dauch Paper Co., Sandusky, Ohio. Pamphlet; well indexed and illustrated. Two handy reference guides.

Flavors — Essences and oils. Fritzsche Bros., Inc., 78 Beekman St., New York. Wholesale price list for February, 1934.

Labeling — "Can - Labeling Troubles—and How to Avoid Them." National Adhesives Corp., 820 Greenwich St., New York, N. Y. Leaflet, 6 pp.

Choose the Right Means to Combat PLANT PESTS

(Concluded from page 113)

are so labeled, may usually be depended upon.

7—Rodent Baits:

Commercial barium carbonate	5 oz.
Bread, rolled oats, or other dry food	14 oz.

Put the two materials in a clean vessel, and stir in just enough water with a clean spoon to make a not-quite crumbly mixture; or:

Commercial barium carbonate	5 oz.
Chopped meat, fruits or vegetables	16 oz.

Either form of this bait is effective when carefully prepared. In working with any rat bait, it should never be allowed to come in contact with the hands. A favorite and satisfactory manner of distributing the baits is to put one large teaspoonful of the mixture into a small paper bag, twist the top together naturally and scatter about where the rats frequent. Choice of bait material to use should be determined by first throwing out unpoisoned samples of each for them to eat and then choosing the most favored one.

Chemical reaction causes all barium carbonate baits to turn bitter after a few hours; therefore, all uneaten baits should be collected each day when continuous baiting is followed. Another type of bait is:

Standard red squill powder	1 oz.
Bread, rolled oats or other dry food	10 oz.

Put the two materials in a clean vessel, and stir in just enough water, with a clean spoon, to make a not-quite crumbly mixture; or:

Standard red squill powder	1 oz.
Chopped meat, fruits or vegetables	12 oz.

Thoroughly incorporate the two materials in a clean vessel with a clean spoon.

Red squill is a relatively new raticide. It, like barium carbonate, is a mild but certain poison which must be taken in relatively large quantities to be effective. There are several red squill preparations on the market in the natural powder, prepared and liquid forms, and they are sold under many trade names. Unfortunately, all of them do not possess the virtues they claim, and as the only practical way of determining their value is by feeding them to rats, the buyer would best judge his initial purchase by the price he pays.

Red squill baits may be distributed in the same manner as was recommended for barium carbonate baits, except that it is not necessary from a flavor standpoint to remove the uneaten baits each day. Another form of rodent bait is:

Commercial barium chloride	1½ lb.
Sugar (granulated)	3 lb.

Mix the two materials, put in a waterproof container and mark "Poison."

To apply, stir two teaspoonfuls into a pint of hot water and put out in pans where other animals will not get to them. When the containers become empty, wash out and refill. Remove all other sources of water possible. This is a liquid form of poison, but may be used with baits by adding only half the quantity of water recommended and soaking slices of bread or other dry foods in the solution. Liquid poisons work on the principle that a rat is more dependent upon water at frequent intervals than food. They are ofttimes effective when the baits are not.

8—Washing Powder:

Anhydrous sodium carbonate (Na_2CO_3)	60 per cent
Trisodium phosphate (Na_3PO_4-$12H_2O$)	40 per cent

Mix the two materials thoroughly, and keep in dry containers.

This powder is excellent for cleaning greasy equipment or floors. For ordinary use in wash tanks or scrubbing use 1 to 3 oz. per gallon of hot water. The materials cleaned should always be thoroughly rinsed after cleaning. As the solution is somewhat caustic to the skin, due caution should be used in handling it. A mixture of 1 lb. per gallon of hot water will remove the old, dried accumulations from garage or machine-shop floors.

The next issue of this series will continue with pest-control formulas.

What is Happening to Our MEAT SUPPLY?

(Continued from page 106)

whole cattle-taxing plan is, so far, nebulous. Feeders are almost unanimously in opposition, and in the commercial cattle breeding area west of the Missouri River, Texas is the only State favorable to the proposition. Their neighbor, the cotton grower, is in receipt of substantial bonuses for reducing production, whetting their appetite for some of the easy money rolling out of Washington. North of the Texas, New Mexico and Arizona line, opinion favoring a beef-processing tax could not be discovered by aid of a search warrant.

The late Senator John Kendrick, of Wyoming, was responsible for keeping beef out of the list of basic commodities included in the present proceesing-tax schedule. Senator Robert D. Carey, of Wyoming, has adhered to that policy, but it is evident that such a tax is now branded as an administrative policy. In its present shadowy form, the plan cannot be intelligently discussed. In any event, it is improbable that any definite step toward taxing cattle at the point of slaughter will be taken during the ensuing six months, or at least until winter feed lots are filled next fall.

The position of Secretary Wallace, in a statement published by Senator Carey, contains these enlightening sentiments: "I am inclined to think that it might be just as well in the case of the cattleman to make cattle a basic commodity now and after that let the thing lay there until next fall; do nothing; just let the cattleman suffer from low prices. Go ahead and let the whole thing wait to see whether they want a processing tax."

All of which indicates that Mr. Wallace is doubtful of the attitude of the majority of cattle growers and feeders toward the proposed processing tax and disposed to await results of that experiment in swine trade.

Meanwhile, steer feeders are run-

ning into fairer weather. Since the turn of the new year, an increasing proportion of the cattle going into beef channels is paying substantial profit margins. The residue of the excessive crop of big steers is rapidly dwindling, competition is in full play and all the handwriting on the wall suggests repetition of 1932 conditions in the fat cattle market of 1934. Beef production responds more readily to price conditions than does that of pork.

A veritable furor over sheep production has developed in consequence of present prices, relatively and actually high. Hogs taken out of production are being replaced by sheep, the only handicap being scarcity of breeding stock.

Appreciation in wool has merely intensified determination to replace farm flocks depleted or liquidated during the low-price period. At farm sales over the corn belt, competition is keen even on ewes of doubtful breeding capacity; values have tripled and even quadrupled, setting the stage for a periodical gamble in ovine stock that will terminate disastrously if precedent is worth anything. However, several years will elapse before lamb production will become a problem.

The program to curtail meat production having for its goal restoration of "fair exchange prices," threatens various complications, not the least serious of which may be a feed surplus. Taking 20 per cent out of the 1932-1933 corn acreage does not necessarily insure yield reduction. As the county agent makes his rounds, advocating necessity for reduction of production, he is frequently accompanied by salesmen for the hybrid corn grower, assuring *added yields ranging from 6 to 25 bu. per acre.* The hybrid corn salesman has multiplied, his assurance of larger yields have a convincing ring, and at $7 per bushel, he is purveying carloads of seed corn, every kernel of which is advertised to hamper the government's production-restriction effort.

It is possible to raise as much corn on 80 per cent of the acreage with potent seed, cultivation and even moderate use of fertilizer.

PACKERS Handed a Marketing Agreement

(Concluded from page 117)

individual packers as to time and quantity of shipments to designated markets to prevent surplus or shortage. Prices for such products in their respective territories may be agreed upon and general rules of trade practice adopted. The allocation of quotas for the packers will not allow general geographical allocation of markets, and "no action taken pursuant to the agreement will be permitted to interfere with the established practice of the packing industry to provide a market for all livestock sold." But the A.A.A. is going to look out for resale distribution before letting the industry go very far toward allocation of livestock supply. Throughout the agreement the principle of strong governmental control and advance agreement to all important privileges is emphasized on the policy that "public welfare and the interest of producers and consumers must be properly and specifically safeguarded."

Meanwhile, hogs are the only phase of the packing industry that have a processing tax and where the question of who pays the tax has come up. While there is no idea that the packers will absorb the tax, and a realization that it will be passed on either to the producer or the consumer, there is evidence that in the present status of the pork market, the packers are absorbing, for a short while, most of the tax of $1.50 per hundred which is now assessed (since Feb. 1, when it was increased from $1). The packer's margin has practically been wiped out on light-weight hogs, the only type on which the government hog-control program is yet working. This is due to the easing down on the price to 20c. below the highest figure last year, which has followed the coming into the market of the light-weight pigs of the generation which lost 6,000,000 of its kin in the relief slaughter last summer. The general feeling at A.A.A. is that the processing tax has not been passed on to the producer to anything like the extent that the farmers think it has. It is pointed out at A.A.A. that the tendency of a tax on any perishable commodity is for it to be paid by the producer when there is an oversupply and by the consumer when there is a demand larger than the supply available.

Traveling Hearth Ovens Make for Low Unit Costs

(Concluded from page 112)

dough film should remain in a fairly moist condition during the first 8 to 10 per cent of the baking time. In many flat-hearth traveler installations it has been found that a material reduction or even a complete removal of the top heat in the baking chamber for the first 8 to 10 per cent of the length of the oven, with the usual bottom heat and proper means for the application of low-pressure saturated steam, resulted in an excellent glaze and generally good baking conditions.

The maximum permissible steam pressure is generally considered to be 15 lb. gage with its corresponding temperature of 250 deg. F. However, some of the most successful and economical steam applications have been at a pressure of 5 lb. gage or less.

The amount of steam required varies with the type of oven and kind of product. On an average, peel ovens require from $\frac{3}{4}$ to 1 boiler horsepower per 100 lb. of bread per hour. Due to a larger steam loss, travelers may require from 1 to $1\frac{1}{4}$ boiler horsepower for the same production.

The use of steam seems an expensive method of applying a film of moisture on the dough, but other and cheaper ways which have been tried have apparently not proved successful. As good results have been obtained by applying the moisture by hand before placing the dough in the oven, the present developments in liquid spraying apparatus should point the way to a simpler and less costly method.

Other problems and controversies, such as: "flash heat," oven "atmosphere" and the various methods of transferring heat to the dough, which came to a head with the introduction of the steel-clad traveler, will be discussed in the next article of this series.

Abstracts of Current Literature

(Concluded from page 130)

Italian Research Council, have found a way to stabilize the essence during machine production processes so that high quality can be maintained without resorting to the sponge process, which necessitates hand labor. A centrifugal separator is used in connection with the extractor, and a mildly alkaline antiseptic aqueous extraction prevents the decomposition which previously accompanied mechanical extraction. Deterpenized essence has recently become an important product; and the terpenes recovered by deterpenization have uses for which they are readily marketable. But there is a disadvantage in this because the terpenes are easily adaptable to fraudulent adulteration in cheap imitation essences, and the industry must watch closely to maintain the reputation of the genuine essence. Preparation of citrus-fruit juices for beverages is increasing rapidly in the Sicilian industry but has not developed as far as in America. Similarly, the production of pectin from lemon peel is progressing in Sicily, but is not yet such an important factor as it is in the American industry.

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ILLIPE OIL. J. Zimmermann. *Chemisch Weekblad,* Vol. 30, pp. 657-658; Oct. 14, 1933.

A variety of bassia or illipe oil, known locally as "ketiau" oil, and produced in East Sumatra, Bangka and Borneo, is obtained from the seeds of *Bassia motleyana.* The kernel makes up about two-thirds of the seed and contains—about 53 per cent—a pale yellow oil having an odor like that of bitter almond oil. Many believe this odor to be artificially introduced to increase the salability. Tests have proved it to be the inherent odor of the oil. The expressed oil is used locally in baking and roasting; its use could be extended.

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MALT. R. Felicetti. *Giornale di chimica industriale ed applicata,* Vol. 15, pp. 448-450; September, 1933.

Introduction of forced aeration, in slowly rotating drums supplied with cooled, humidified air, was a great advance in the art of malting barley. Another important development has been the control of conditions during malting and drying to obtain desired variations in its diastatic activity to accord with its intended use. The major use of malt is in brewing. However, there are other important uses which should be encouraged, such as its use, or of its diastatic extracts, in baking; no other means for bringing out the best bread-making qualities of wheat flour seem to be equally rapid and satisfactory. Malt is similarly useful in the manufacture of the macaroni pastes. In preparing sugar mashes from starch, for alcoholic or other industrial fermentation processes, malt diastase is superior to the commonly used chemical saccharifying agents. It is beneficial also in infant and invalid food preparations. In keeping with the trend toward the use of agricultural products in other than the food industries, there is a large field of use for malt and its products in the manufacture of textile sizes and dressings from cheap starchy materials.

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MICROSCOPIC IDENTIFICATION OF ONIONS, CABBAGE-LIKE PLANTS, TOMATOES, OKRA, FENNEL, CARDY AND ARTICHOKE. W. Drude. *Zeitschrift für Untersuchung der Lebensmittel,* Vol. 56, pp. 497-539.

While much work has been done on microscopic identification of vegetables, most of such work is unsatisfactory in that it gives individual cases instead of a complete comparison, and does not have satisfactory illustrations for rapid orientation. This is the first of a number of papers giving an exhaustive compilation of the plant anatomy, both macroscopic and microscopic, of a large number of vegetables, with special attention to identifying characteristics. Treatment is complete and exact for the vegetables studied and the article is well illustrated.

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DECOLORIZING EARTHS. Guglielmo De Salvo. *Giornale di chimica industriale ed applicata,* Vol. 15, pp. 389-391; August, 1933.

As the cost of decolorizing is an important item in the refining of edible oils, reactivation of the spent adsorbent earth is necessary for economical operation. In the new method of inexpensive thermal reactivation the spent earth is freed from oil by any suitable means, then heated in a rotary dryer at temperatures below 400 deg. C. The fuel consumption, with a well-built furnace, is only about 10 per cent of the weight of earth treated. In most cases the dried earth, when ground to the same fineness as the original material, is highly active, but sometimes it is advisable to add 1 to 1.5 per cent of concentrated sulphuric acid. The method is based on many experiments, which indicate that greatest reactivation is obtained by carbonization at the lowest possible temperature, in absence of air and under a pressure which gives the greatest possible porosity. The treatment leaves 8 to 10 per cent of carbon in the reactivated earth, which probably explains why the reactivated earth is more active than the original (sometimes more than twice as active). Experimental results are shown for peanut, colza and sesame oils and for a wine oil, with franconite and with Tonsil.

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OILS FROM SOLANACEAE. S. L. Ivanov and A. I. Lyutenberg. *Papers of the Central Biochemical Food Research Institute* (U. S. S. R.), Vol. 3, pp. 219-238; No. 23, 1933.

Of the many species of Solanaceae, there are a number whose seeds are rich in oil (20 to 38 per cent) which could be utilized to good advantage in the vegetable-oil industry. The seeds also contain alkaloids, notably atropine and hyoscyamine, which are not oil-soluble and so are not contained in the oil, but can be readily recovered when the oil is isolated and processed. It has been well demonstrated that the oils are edible. Henbane seed and thorn-apple seed are two of the most abundant sources of Solanaceae oils. Chemically, the oils from these two seeds are similar to those of cultivated Solanaceae, namely pepper seed, tomato seed and tobacco seed oils; they contain glucosides of palmitic, stearic, oleic and linoleic acids. A Russian syndicate, the Lektekhsuiryo Co., is planning to harvest annually 50 tons of thorn-apple seed and 25 tons of henbane seed, but the potential market in the oil industry undoubtedly is larger than these quantities.

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FERMENTATION CITRIC ACID. M. Giordani. *Giornale di chimica industriale ed applicata,* Vol. 15, pp. 350-351; July, 1933.

In the production of citric acid from sugars by fermentation with *Aspergillus niger* there has been a tendency to overemphasize the importance of preparing and using pure special strains of *A. niger.* More attention to the proper control of operating conditions to permit efficient conversion with any *A. niger* culture whatever would be better. The inoculating procedure is an important factor; prolonged immersion of the spores in water or suitable solutions is preferred. Also cultures prepared with invert sugar are more efficient than those prepared with cane sugar. Another important consideration is the absence of iron compounds in the fermentation system, as iron salts accelerate oxidation and decrease the yield of citric acid. Careful observance of these and similar considerations in providing optimum fermentation conditions makes possible yields of 50 per cent—even 60 per cent—calculated on the sugar used in the fermentation.